

10 Rock ©

POPULAR Only 40p. Computing WEEKLY

17-23 January 1985

It's the best selling weekly

Vol 4 No 3

Vegas CES show report

New Coleco micro awaits licence deal

HAVING dropped its Adam computer in the US after months of speculation, Coleco is reported now to have developed a new computer.

The new machine was shown to a few prominent retailers at the Winter Consumer Electronics Show in Las Vegas last week and Coleco is hoping to license the computer to an unnamed American consumer electronics manufacturer.

The machine features a built-in telephone, modem and communications software and is software compatible with the Apple IIe and IIc.

Coleco is also retaining the rights to the name Adam, but

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Sinclair offers upgrade

SINCLAIR has confirmed that it is to provide an up-grade kit to convert rubber-keyed Spectrums into Spectrum Pluses (see *Popular Computing Weekly*, December 20).

The upgrade will be offered in two forms. Either the consumer can buy an upgrade kit from Sinclair costing £20 or pay £30, for the upgrade to be carried out by Sinclair itself.

The upgrade takes the form of an add-on Spectrum + type keyboard which is fitted in very much a similar way as many of the other Spectrum

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Commodore's C128 - in the UK this summer

Doubts over C16 & Plus/4

THE FUTURE of the Commodore C16 and Plus/4 machines is in doubt following disappointing sales and software support, particularly in the US, and the launch of Commodore's C128 machine which is scheduled for launch in the UK in the Summer.

According to Frank Leonardi, Commodore's US vice president in charge of marketing, "The Plus/4 and

C16 are not selling well in the States, largely because of a lack of advertising. They will have to be repositioned in the marketplace."

In terms of software support, there has been no software released in the US for either machine from any independent software houses. In this country, while there has been a trickle of support for the C16, none has yet appeared specifically for the Plus/4.

With the launch of Commodore's new C128, and LCD portable machines both of which are partially compatible with the Commodore 64 - the non C64 - compatible C16 and Plus/4 appear now rather left out by Commodore.

Whether any cut in the price of the machines in

Continued on page 4 ▶



Frank Leonardi



INSIDE

▶ ATARI'S NEW ST MICRO - FULL DETAILS

commodore



Alice IN VIDEOLAND



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Alice in Videoland is a revolutionary new concept in entertainment for the Commodore 64, incorporating some of the finest graphics ever seen on any home computer, accompanied by a charming musical score. There are four different game scenes involved, and your performance in earlier ones will affect your ability to get through later ones and determine your eventual total score.

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Scene Two - Out in the garden the Cheshire cat looks on as Alice meets the pipe-smoking caterpillar. Help her to catch the bread-and-butterflies and the rocking-horse flies that change into the balls used in the croquet game in the last scene!

Scene Three - Alice is a pawn in the chess game where her opponents are the Jabberwocky and Tweedledum and Tweedledee. Help her across the board by protecting her with your White Knights!

Scene Four - The most bizarre croquet game ever! Help Alice hit the balls through the playing-card-soldier hoops before the Queen of Hearts stomps on them!

Alice in Videoland is available for the Commodore 64 on disk - £12.95, and now on cassette - £8.95.

Alice in Videoland features graphics created with the Koala Pad.

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View

It's obvious that Jack Tramiel knows exactly where he's going.

Atari's ST machine, launched last week at Las Vegas CES show, is very well thought out. A desirable micro at an affordable price.

On paper, at least, it looks most impressive.

I have no wish to be unkind to Sinclair, but it's the machine the QL promised but never delivered.

The ST (sixteen/thirty-two, not Sam Tramiel, apparently) uses the 68000 chip. This immediately makes the machine a more attractive proposition than the QL. The power of the 32-bit internal architecture isn't fettered, as it is on the QL, by having a 8-bit bus to the outside world. Both machines have 128K Ram. Although the Atari machine doesn't have a built-in disc drive it is configured for the Sony 3 1/2 inch format drives. The 3 1/2 inch format is a popular choice and not nearly as limiting as the QL's built-in microdrives. The ST's huge 198K Rom, which holds Digital Research's mouse controlled Gem operating software, is a more satisfactory (and ambitious) approach than Sinclair's Psion applications packages which must be loaded from microdrive.

But where the ST is at its most impressive is in the little touches: its I/O facilities, its built-in hard disc controller and Midi music interface.

Sinclair, Commodore and Acorn ought to be getting nervous. Sinclair has thrown away much of its 12-month advantage with the QL through its dogged passion for microdrives.

Commodore's C128 is a stop-gap while its Amiga rival for the ST is still being refined.

And Acorn is mystifying. Surely it cannot think that the BBC will compete with the ST at the same price?

POPULAR Computing WEEKLY

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ABC

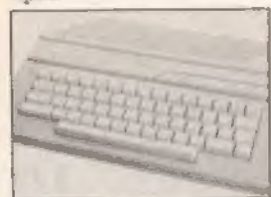
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Computer Trade Association Magazine of the Year

Atari's European launch

ATARI'S new ST and XE range of 32/16 and 8-bit machines, launched to the US at the Winter Consumer Electronics Show, last week will get their first European showing at the Hanover Fair in April.



"We plan to have all the new machines on sale throughout Europe in May, and we will be bringing out the whole range at once," said Atari UK's marketing manager Rob Harding.

Two Atari software packages also planned to be available at launch for the 8-bit XE range are *Infinity* and *Atari Writer* +.

"*Infinity* is a Lotus 1-2-3 type integrated package, but it will be far cheaper. *Atari Writer* + will be as *Atari Writer*, but with a built-in proof reader," Rob continued.

"We are definitely moving away from games software to more serious applications - games is almost a dirty word at Atari now."

Also the 32-bit workstation, announced by Jack Tramiel last December (see *Popular Computing Weekly*, December 13), which was not shown at CES, will be on show at Hanover and is due for a May launch here.

Acorn's ABCs on the way

FIRST UNITS of Acorn's ABC micro range are now coming off the production lines, and deliveries of the machine are now scheduled to begin at the end of this month.

"The bottom of the range machines will be available first, with the top machines not coming out until Easter time," said an Acorn spokesman.

Acorn have still not released official prices for the series, but the low-end Personal Assistant model is expected to be priced around £700 with the top-of-the-range 310 costing around £4000.

Spectrum upgrade

◀ continued from page 1
keyboard up-grade kits already available. Some soldering is needed, but, says Sinclair, "you don't need an understanding of electronics."

With the £80 upgrade service, you need to send your Spectrum back to Sinclair which says it will despatch the upgraded computer back within ten days of receipt.

The service is operating from Sinclair's Camberley Branch. Details from Sinclair Research, Upgrade Department, Stanhope Road, Camberley, Surrey, GU15 3PS.

Avalon sequel set for March

THE SEQUEL to Hewson's successful graphic adventure *Avalon* should be available at the end of March.

Called *Dragonarc* of *Avalon*, it uses the same characters as the original while introducing others. More use is made of keyboard commands. It will be available for the Spectrum, almost certainly at the same price as *Avalon*, £7.95.

Paddle your own canoe



NEW GENERATION have launched *Shoot the Rapids*, a slalom canoeing simulation.

The player must use the keyboard or joystick to paddle the canoe through a slalom course. Water currents, adverse or favourable, are displayed on screen and must be taken into account. In later screens you will have to negotiate beavers as well as the slalom poles.

Shoot the Rapids is available for the Commodore 64, for £7.95.

C16 and Plus/4

◀ continued from page 1
America would be reflected in this country is unclear.

Sales of the two new machines over Christmas appear to have been moderate, with the Plus/4, which reached the shops a few weeks later than the C16, moving markedly slower.

"They are selling as well as we expected, and the C16 is doing quite well," said Dave Gilbert of Dixon's. "Sales of the Plus/4 are more limited -

DK'Tronics buys Currah

DK'TRONICS, the Spectrum peripheral manufacturer, has come to the rescue of Currah, which went into receivership three weeks ago.

"We have bought the rights to the Currah trading name, and the exclusive copyright to the Currah range", said Roger Barnard, marketing manager of Dk'tronics.

Currah's range consists of Currah Slot, a Spectrum adaptor, and Currah's speech synthesiser for the Spectrum and Commodore 64.

Dk'tronics plans to continue producing and marketing its own Spectrum and Amstrad speech synthesiser in parallel with the Currah models. It will also re-open its US company to market Currah's Commodore 64 version.

it's not selling as well as the QL."

John Flatman of Boots said, "Sales have been disappointing in comparison to our own expectations. We were hoping that the C16 would be a low-end competitor to the Spectrum and it just didn't happen. Even so it is selling faster than the Plus/4, but then it's at a lower price."

Chris West, Commodore UK's software development manager denied that Plus/4 sales had been sluggish: "The Plus/4 is actually doing better than we thought it would. We are on target for 100,000 sales by March."

"Commodore's next big push in the home market will be the launch of the C128 over here in June or July."

● Commodore has gained the license from Infocom to produce a Plus/4 version of *Hitchhiker's Guide to the Galaxy*. The game should be released, on disc only, in March/April.

Coleco

◀ continued from page 1
will not have any part in the marketing of its Adam machine. It has sold off remaining stocks of the Adam to an as yet undisclosed retail outlet in the US.

"We are still producing both hardware and software for the Adam, but due to current conditions in the marketplace and the rapidly changing demands of the consumer, the Adam could not remain a competitive concern," said a spokeswoman for Coleco in Connecticut, USA. "We will, however, continue to produce and sell the Colecovision video games system in America."

The Adam computer was launched in the US eighteen months ago, and suffered from initial manufacturing difficulties which led to inadequate supplies and poor sales. Last Autumn, Coleco substantially cut the price of the machine, giving rise to rumour that it was planning to abandon the model.

Coleco pulled out of the UK market two months ago (see *Popular Computing Weekly*, November 29). Both in the UK and US markets it plans to concentrate on its range of toys, which includes the infamous Cabbage Patch Doll.

Sinclair's C5 launched

SINCLAIR'S electric vehicle, the C5, was launched last week, with much publicity and reassurances from Sinclair that the vehicle would be safe on the roads.

The vehicle - Sinclair is deliberately not calling it a 'car' - is a three wheeled



single-seater, selling by mail order for £399, the same price as the QL.

It is powered by a 'deep-discharge' 12V battery, and also has pedals, useful for

hills, and if the battery runs out. The battery gives a distance of 20 miles on a single 8 hour charge.

The chassis, developed by Lotus cars, is made of light steel, and the body is built of injection-moulded polypropylene. A single headlight is built-in both at the front and at the rear.

The steering bar, similar to the handle bars on a bicycle, is placed so that it is below the driver just in front of the seat. The battery on-off switch is on the handle bar, and must be kept pressed, or the battery cuts out.

The C5 is only the first in a range currently being developed by Sinclair Vehicles. "We plan a family of pollution-free, economic, quiet electric vehicles. The C5 is the baby of that family", said Sir Clive Sinclair.

● The C5 is not the only new product from the Sinclair stable in 1985. At the Consumer Electronics Show in Las Vegas, Sinclair Research launched a wristwatch radio. It will be aimed primarily at

the US market and at the moment there are no plans to introduce it in the UK.

"The watch takes an FM signal only", explained a Sinclair spokeswoman. "While there are a large number of FM stations in the States, there are few over here."

The watch comprises a full-function (calendar, light, alarm included) digital watch, and an FM radio. All the watch functions can operate simultaneously with the radio, and the antenna is incorporated into the wristband. It takes a 1½V battery, which lasts up to 100 hours. The watch will sell for just under \$100.



QL add-ons now ready

THE FIRST of Quest International Computer Technology's peripherals for the QL (see *Popular Computing Weekly*, November 1) are due to be shipped this week.

The 64kK and 128K Ram boards will be the first to be available. The other disc drives, Ram boards and software, should be released at the beginning of February.

Quest will initially be selling the products by mail order. Details from Quest, School Lane, Chandlers Ford, Hampshire.

Commodore PC at UK show

COMMODORE'S IBM PC software compatible micro - the Commodore PC - is to be launched in the UK this week, at the *Which Computer?* Show.

The machine has a built-in display and disc drive, has 286K Ram expandable to 640K, and is expected to be priced around £2,000.

Get more out of your BBC Micro with the New Marconi RB2 Tracker Ball

Marconi's new Tracker Ball is superior to either a mouse or joystick and is easier to use.

The RB2 design incorporates Marconi's vast experience in making Tracker Balls for Air Traffic Control and professional equipments which demand maximum performance and reliability. It is drift free and gives more precise positional control - the cursor position on screen relates directly to fingertip movement on the ball. The three push buttons normally control the delete, return and copy functions but you can also assign your own functions to the buttons.



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Follow suit?

Why is there no joystick standard for BBC software.

Well respected Ultimate bring out *Jet Pac* for the Beeb. Great. The same company brings out *Sabre Wulf* for the Beeb. Yet one offers a joystick option, the other does not. Why?

The game which spawned a thousand clones, *Manic Miner*, comes out for the BBC with no joystick option.

The same with *Program Power*. Half of their BBC games support joysticks, the other half will only accept keyboard entry.

I wouldn't mind if all the BBC software was keyboard input only, but surely, once one company had set a precedent, the others must follow suit? Apparently not.

These days any C64 game without a joystick option would be panned out of sight. Why not the same for the BBC?

Michael George
9 Rockhouse Close
Barton
Eccles
Manchester

Pioneer world

Glen Counsell is both right and wrong in his article *Nightmare World*, *Zigurat* December 13. He is right in questioning the new technology, right in asking whether we are capable of handling it. But quite wrong in his prognosis.

Not so very long ago, people travelled mainly on foot to by horseback.

In the early seventies the pocket calculator arrived. (Pocket? Mine was about the size of a modest transistor radio, would do all four functions and had the same price tag as today's ZX Spectrum). General opinion had it that they would turn all the current crop of youngsters into button-pressing cabbages.

What the prophets of gloom and doom failed to take into account was that, whether you set out by car or on foot, you still have to know where you are going and how to get there. Using a car or calculator, you not only get there quicker, you can indulge in a

bit of exploration in the way. At the risk of putting the cat amongst the pigeons, I would say that the general awareness of mathematics is higher today than it has ever been - mainly due to the advent of the calculator and latterly the computer.

If the new super-duper computer comes along, that can do everything faster and better than me - then let it. On philosophical grounds, I refuse to compete with those far abler than I. I don't think it matters a tinkers' cuss whether the motivating Ram/Rom is composed of silicon chips, grey matter or fairy rings.

Surely the whole theme of Glen Counsell's article is not fear of the new technology. It is the other bug-a-boo that currently haunts us - redundancy, which is quite a different bag of bones.

D L George
11 Stockers Close
Wiveliscombe
Nr Taunton
Somerset

Word perfect

The following information may be of use to any other owners of the Amstrad disc drive owners who possess the *Tasword/Amstrad* word processor together with *Tasprint*.

In order to load the configured *Tasprint* fonts onto the disc you should first Load the initial part in from the tape ie, Load "Lectura.BAS". Once loaded type :Disc and then save to the disc. The

"Lectura.DAT" can be loaded in as a binary file using the format as described in Chapter 2.11 of the disc manual.

The length of each file is 5120 with the start address being different for each type of font:

Font	Address
Lectura	12000
Median	17120
Compacta	22240
Data	27360
Palace	32480

Once saved on to disc then Run "Lectura.bas" and then Run "Tasword.bas". This will load in the font and then the word processor.

Graham C Paterson
58 High Street
Burntisland
Fife

Lunar correction

Referring to the Dragon Lunar Module program in the December 8 issue a small omission appeared in Line 1110. This line should read:

```
1110 IF F4 = 1 THEN C = 200
:GOSUB 9210 :GOSUB 7000
```

Ashley Watson
March
Cambridgeshire

Dragon v. BBC/QL

In response to F Arkley's letter saying he couldn't understand how the Dragon could possibly be superior to the BBC or QL (December 20 issue), try this.

For £400 it is now possible - following Dragon's unfortunate demise - to purchase either a BBC model B, or QL or a full Dragon 64 system - consisting of a Dragon 64, a single 5.25 inch disc drive, the OS9 operating system and Basic 09.

All three have real keyboard's (as it's only just after New Year I'll give the QL's the benefit of the doubt).

OS9 provides Unix-like commands. For those who do not know Unix it is used on PDP minicomputers and allows multi-user operation and multi-tasking, and has a multi-level directory file system.

Basic 09 makes BBC Basic and SuperBasic look half-baked. It allows access to all OS9's powerful commands,

syntax check in entry, it does not need line-numbers and line-numbers can be local to procedures. It had the following control structures: *If Then Else*, *Endif*, *Loop Endloop*, *While Do Endwhile*, *Repeat Until* and *On Error Goto*. It allows user-defined data types, as well as the standard integer, real, byte, string and boolean. It comes complete with a text editor that can be used with other languages such as Pascal and C. Finally, Basic 09 is a semi-compiled and semi-interpreted language which gives it speed as well as versatility.

Now P Arkin should have some idea of how the Dragon 64 is better than the BBC B or the QL - you can now get both for the same money.

I realise that in some ways Dragon lets itself down, but for my purpose, as an A-Level computer studies pupil, the Dragon is ideal.

Carl Jones
24 Bishop's Road
Whitchurch
Cardiff

Watch your memory

Regarding the recent letters about loss of memory on the QL, I have run out of memory when writing programs which do not involve opening channels. Thanks to Nowotnik's helpful article I have been able to find the source of my problem. The following short program illustrates the fault.

```
100 CLS: DIM a$(10,18)
110 FOR i = 1 TO 10: a$(i) = "AAAAAA"
120 FOR k = 1 TO 600: 130
FOR i = 1 TO 10: 140 AT i,
o: PRINT a$(i,4 TO 18)
END FOR i: 160 AT 18, 10:
PRINT k: AT 18, 10:
PRINT " ": AT 18, 10:
PRINT PEEK L (163856)
PEEK L (163852) 170 END
FOR k
```

This will normally give an 'Out of Memory' message - just run it and watch your memory disappearing at the bottom of the screen.

The problem can be cured by altering Line 140 to:

```
140 x$ = a$(i,4 to): AT i,o:
PRINT x$
```

A Beadle
65 Swinburne Road
Abingdon
Oxon




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DOMARK

Dear Reader

16th January 1985

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We wish you all the best of luck in your search and to help you on your way, will send you a FREE Guide to Adventure Games (no clues to the £25,000 though!) if you send in a stamp plus your name and address to us.

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Mark Strachan

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Vegas - Atari's gamble

Dafna Israeli, still jet-lagged, with the first of two reports from the US Winter CES Show. This week: Hardware

If you think it's too parky over here maybe you should have gone to the Winter Consumer Electronics Show in Las Vegas where the temperature, at least for the first couple of days, remained in the 80s and the humidity held up at a steady 80%. The Las Vegas Convention Centre - where the show took place between January 5-8 is, well, huge. And it is adjacent to the Las Vegas Hilton, the biggest hotel in the world. Not a lot of people know that.

Las Vegas is big on hotels. Hotels, motels, casinos - and desert.

Over 80,000 people turned up to this CES - a figure somewhat down on the last June's CES. The stars of the show were undoubtedly the new computers from Atari and Commodore. Many of the companies in the depressed US software trade are relying on these micros to put the sparkle back in what is currently a very flat market.

Before getting to grips with the new Atari and Commodore machines, though, a word about Sinclair and MSX.

Sinclair showed its QL micro - the same version as the machine on sale in the UK, which will go on sale by mail-order in the US for \$499 from next month. The Spectrum+ was also in evidence, but the company at present has no plans to sell it in the US. Sinclair also showed a new product - a combined wristwatch/FM radio, which it hopes to sell for under

\$100. There are no plans for the device to be sold in Britain.

Reaction to the QL in America is still very muted. The prospect of Microdrives is not setting the world alight and, although the majority of software houses view the machine as a reasonable effort, the position of most of them is fairly precarious at the moment and none seem keen to produce material

cost 68000-based machines (see last week's magazine) was very favourable. Tramiel went out of his way to court the US software houses, and machines for software development are expected to go out by March. Machines could be in the US shops at the same time, but general feeling was that the micro was more likely to appear in the summer.

The ST comes in two forms - the 130ST with 128K Ram at \$399 and the 520ST at \$599. Each includes a choice of Basic or Logo as the built-in language, a 198K Rom (expandable to 320K with a 128K plug-in cartridge) including Digital Research's *Gem* and *Gem Desktop* operat-



Atari's 130ST 68000-based micro

for a machine which at best is seen as an also-ran outsider. Sinclair's decision to sell the machine by mail-order has also not gone down well and the launch of Commodore's C128 and Atari's ST series will make life very difficult for Sinclair.

It also makes things very difficult for the Japanese MSX manufacturers who took the opportunity of the Las Vegas show to formally launch the MSX standard in the States. Unfortunately, all eyes were on Commodore and Atari.

Under the leadership of Jack Tramiel, Atari announced a range of six new computers designed to put the once ailing micro firm back on its feet.

Reaction to Atari's ST range of low-

ing systems. *Gem* and *Gem Desktop* offer the same kind of icon working environment found on machines like Apple's Lisa and Macintosh, and operate using the ST's built-in 'mouse' controller. Included also in the Rom are word-processor, file handling and a calculator. *Gem* presents these with icons, windowing, pop-up menus, memory management and also a real-time clock.

The machine uses a 32K bit-mapped screen with three graphics modes - 320 x 200 pixels in 16 colours, 640 x 200 pixels in four colours or 640 x 400 pixels in monochrome. The colours can be selected from a palette of 812 colours (eight levels each of red, green and blue). The machine has a built-in



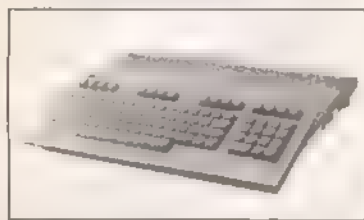
Sinclair's watch/FM radio

communications serial port, disc controller and interface (for Atari's 3½ inch disc drive), hard disc interface and twin joystick ports - one of which is configured for the mouse.

Four display outputs are provided - TV, composite video, RGB and high-resolution monochrome monitor.

Both ST machines use the General Instruments three-channel sound chip and include a Midi standard music interface.

Atari's remaining four new computer are actually not quite so new. They are all developments from Atari's present 800XL machine. The 85XE is roughly a 64K 800XL in a new case for under \$129. The 85XEM is a music version of the machine with eight sound channels and the ability to output sound through a hi-fi. The 85XEP is a portable version with built-in 5 inch 40 × 20 character display and 3½ inch disc drive. Finally, the 130XE at under \$200 is a lower cost rival for Commodore's new C128, with 128K Ram in two switchable 64K blocks.



Commodore's C128 - something for everyone?

The other major news at the show was Commodore's announcement of its C128 PC and LCD portable machines. Both use developments from the 6802 8-bit processor, already used by the Commodore 64. Commodore's Amiga 68000-based machine ■ being further developed ("additional features are being added") It is not expected ■ be seen until June CES, to go on sale in late '85/early '86.

Commodore has also decided not to take on IBM on its home ground. Its 256K IBM-compatible PC will not be sold in the US; however, it will be marketed in Europe and is expected to go on sale in the UK, priced around \$2,000, in February.

Back to the C128. The machine is an attempt to offer something for everybody. It has 128K Ram in two switchable 64K blocks, together with a new version of Basic, Basic 7.0. In a second mode it can be a Commodore 64 - fully software and peripheral compatible with the C64, complete with the 64's 2.0 version of Basic. Finally in a third mode the C128 uses its built-in Z80 second processor to give it CP/M compatibility.

The C128 will be available in two forms. The basic form will sell for under \$300 and have no built-in disc drive. A second version will have a 5½ inch disc drive built-in. Commodore also announced a new separate disc unit to accompany the C128 - either to provide



Commodore's 1571 disc drive

a disc drive for the Basic model, or a second drive for the up-market version. In its CP/M mode the C128 is compatible with any ordinary 5½ inch disc format CP/M software. No special disc reformatting is required.

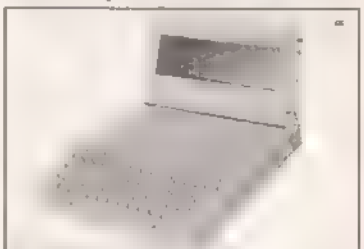
In C128 mode the machine has 128K Ram, 48K Rom, 16 colours, two display configurations - 320 × 200 and 640 × 200 pixels. In C64 mode the machine has only 64K Ram, 16K Rom, only the 320 × 200 display format, but eight programmable sprites. In CP/M mode the machine has 128K Ram running under CP/M Plus OS version 3.0. Memory is expandable to 512K (as ■ is in C128 mode). The machine is then a disc-based system, with the same two display configurations of C128 mode.

The C128 has a cassette port, tv output, user port, audio I/O, composite video output, serial port, twin joystick ports, RGB output and a cartridge slot. A 'mouse' controller option is available.

Commodore's new 1571 5½ inch disc drive to accompany the C128 offers a 0.5M unformatted capacity (350K formatted). The device is also fully compatible with the C64, Plus/4 and LCD machines. The device is intelligent; ■ features its own built-in 6802 processor with 2K Ram and 32K Rom. In Commodore mode it uses double sided/single density discs and is compatible with Commodore's existing 1541 and 2031 drives (although faster). In CP/M mode it uses double-sided/double density discs and 'boots

up' in IBM System 34 format (Kaypro and Osborne compatible).

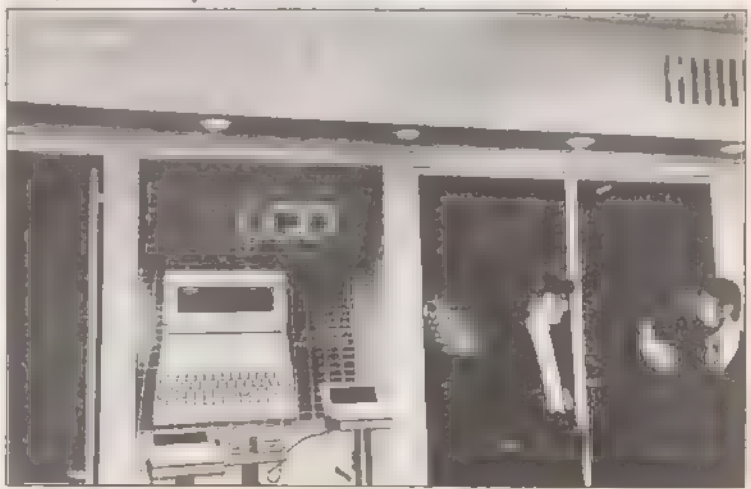
The company's other new micro, the LCD Portable is intended as a self-contained unit, featuring its own 80 × 16 character (480 × 128 pixel) liquid crystal display and using a version of the 6802 processor. The device has a 32K CMOS Ram and a 96K CMOS Rom. The Rom includes Basic 3.6, a word processor, file manager, spreadsheet, address book, diary, monitor, calculator and memo pad. The machine also has a built-in modem and the Rom includes 300 baud communication software. In addition, the machine has an RS232 interface, Centronics printer connection, C64 seri-



The LCD portable

■ interface (making it compatible with all C64 serial peripherals), barcode reader port, cassette interface and memory expansion slot. The LCD portable is battery powered.

What then of Commodore's Plus/4 and C16 micros? Both the C128 and LCD Portable are designed to be Commodore compatible. Neither are Plus/4 compatible and the disc drive, promised for the Plus/4 in June last year has yet to appear. software support is also weak for the Plus/4 or C16 titles outside the Commodore ■ stand itself. As a result, rumours that the Plus/4 and C16 are both to be scrapped were flying around all over the place. Commodore firmly denied the rumours, instead claiming that the machines would have to be "repositioned". We shall see.



Interceptor

Place yourself at the controls of a SAM missile in this game written for the QL by Ian Williams and Steven Hollywood

Interceptor is a game based on the actual methods of use of the surface to air missiles (SAMs) as used in the Middle East some years ago.

A SAM 7, made by the Russians, consisted of the guided missile itself, a launching unit and a remote guidance system. In the case of the SAM 7 this involved a small television monitor and a joystick, exactly the same as can be found on any home computer. When the target was sighted the operator lined up the launch unit using physical sights in the general direction of the attacker. When the sights were roughly aligned the missile was launched.

As it sped towards the attacker it unravelled a long, steel wire which connected it to the television camera through which the attacking plane, or ballistic missile could be seen by the operator, who was, of course, still on the ground. The object was to score a hit by manoeuvring the SAM with the joystick onto the attacker.

In this game, you are presented with a set of six bases and one central control base. As the game starts, ballistic missiles appear from the top of the screen and begin to close onto your bases. In

the centre of the screen there is a small circle. This is your sighting circle, moved using cursor keys.

When a missile track enters the small circle you activate the laser controlled SAM launch by pressing the fire button or the space bar. Immediately a burst of laser bits is fired from your base and the target computer checks to see if your SAM is close enough to be launched. If not, then you will just have to try again. When the computer has verified the targeting co-ordinates then a window opens up in the centre of the screen.

It is your job to centralise your SAM exactly so that the oncoming missile appears in the dead centre of the monitor window. As soon as this position has been achieved the attack computer, which is calculating the position every millisecond, activates the proximity fuse which automatically destroys the missile and ups your score by 50 points! If, however, you permit the attacker to get too close to you, his missile will neutralise your SAM and you will get a "Negative Take-out" message.

Each succeeding wave is more difficult and it can be great fun altering some of the variables to increase the explo-

ations, speed etc. Altering the value of *vel* in Line 260 will alter the speed of attack of enemy missiles while altering the *score* values in Lines 2050 and 2180 can fool everyone as to your ability!

Program Notes

Procedures form the core of the game and are called as follows:

- Poster and Messout* - Output the title screen.
- Dimbo* - Dimensions arrays, sets up the five screens and initialises variables.
- Score var.* - Sets up the score window and increases score by 'var'.
- Ground* - Draws remaining bases following hits.
- Airburst* - Checks for available bombs and drops them.
- Wammo* - Moves bombs & checks for hits.
- Base x,y* - Draws gunbases & cities.
- Bang x,y,s* - Draws explosion at centre x,y with radius *s*.
- Zap c* - Removes destroyed cities.
- Sights* - Creates and moves circle sights, checks for fire button or space bar, activates "sam".
- Sam* - Launches missile, opens television window and responds to direction from operator.
- Death* - Closes windows and ends game.




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2100 PRINT "*****"
2110 GOTO 2100
2120 IF (A=0) THEN GOTO 2130
2130 PRINT "*****"
2140 GOTO 2100
2150 IF (A=0) THEN GOTO 2160
2160 PRINT "*****"
2170 GOTO 2100
2180 IF (A=0) THEN GOTO 2190
2190 PRINT "*****"
2200 GOTO 2100
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2240 IF (A=0) THEN GOTO 2250
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2990 IF (A=0) THEN GOTO 3000
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3010 GOTO 2100
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5150 IF (A=0) THEN GOTO 5160
5160 PRINT "*****"
5170
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User Groups & Micro Clubs

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In February *Popular Computing Weekly* is printing a nationwide guide to micro clubs and user groups. In order that the information is as up to date as possible, we need details of as many user clubs you can think of. If you attend a club regularly, ask the secretary of your group to send us the following information, as soon as possible.

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Club Name: Town/District:

When does it meet (Time, frequency, day, dates):

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Hardware Review

Desk space

Hardware Mancomp MO184 Spectrum keyboard Price £59.95 Supplier Mancomp, Unit 8, Levenshulme Trading Estate, Printworks Lane, Levenshulme, Manchester M19 3JP.

The introduction of the Spectrum Plus might be thought to have knocked the add-on keyboard market on its head. However, the Plus costs £50 more than the standard Spectrum, and its QL-style keys aren't universally popular, so there should still be demand for upgrades.

This model, the Mancomp 184 keyboard, could have been a contender, but the design is a let-down on a couple of points. Firstly, the good news; the MO184 is easy to fit. All you have to do is unscrew the Spectrum's PCB, clip it into the Mancomp's base, connect the cables to the keyboard, and clip on the top.

Now the bad news. The MO184 is designed to take Interface One without modification, no bad thing in itself. It also has a large hole to fit the power transformer, again no bad thing. The big problem is that the resulting unit is ridiculously large - much wider and deeper than a Commodore 64. You'll need to clear plenty of desk space be-

fore using it.

The construction also isn't very impressive; the fibreglass sheen looks cheap, although the materials are admittedly sturdy, and the key legends are coloured stickers (although production models may feature screened legends).

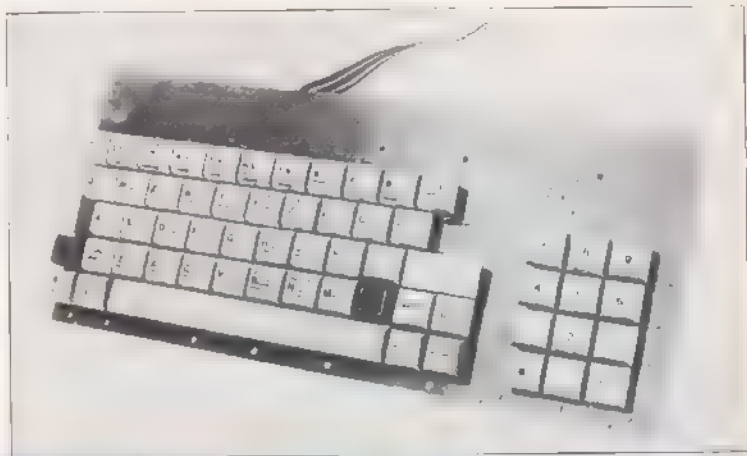
The keyboard itself has a positive action and short key-travel, and features a 12-key numerical/cursor/point pad to the right of the main section. There's also the obligatory full-size space bar, ex-

tended Enter key, extra Shift keys, and cursors at each end of the space bar.

Additional features include a pen rest, which looks like a deformation in the casing at first sight, and 'palm rests' - presumably for mounting exotic houseplants.

On the whole the Mancomp MO184, at £59.95, doesn't offer much that more attractive units don't have. But if you have a big empty desk to fill up...

Chris Jenkins



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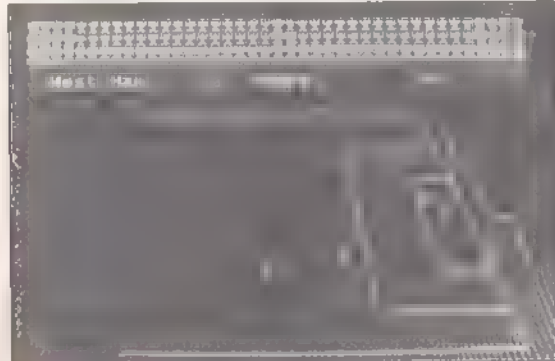
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On-side!

Program Football Manager Micro Amstrad CPC464
Price £7.95 Supplier Addictive Games, 7a Richmond Hill, Bournemouth, Dorset.

I've got a confession to make here - I'm not one of those who has a reserved position on the terraces every Saturday. So when I was given this tape to review I thought something



along the lines of 'Oh, it's that game that football maniacs sit up all night playing, the fools.' Why was it then that I finally crept into bed, my voice hoarse from croaking 'Come on you reds' and 'Goals win games, Brian', at four in the morning having made the neighbours sick as parrots with all the cheering? The only answer is that Kevin Toms has stumbled onto one of the the classic game for-

mals of all time, on a par with *Monopoly* or *Ludo*.

Take it from me, a frightening empathy with Brian Clough emerges in your soul as you take your lowly fourth division team to a giant killing triumph in the FA Cup. Despite being one of the most technically basic games still available, this will be as big on the 484 as it has been on every machine since the ZX81. For those who really don't know, it's a strategy game where you juggle with the various strengths and

weaknesses of your team and try to stretch the finances far enough to buy star players and put yourself on the road to football glory. The game is made by the on-screen nail-biting highlights of each match.

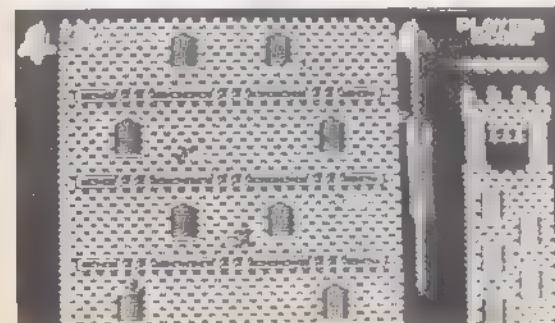
Now where did I put that tape? Here we go, here we go, here we go.

Tony Kendle



Macabre

Program Hunchback II Price £7.90 **Micro** Commodore 64
Supplier Ocean, 6 Central Street, Manchester M2 5NS.



Hunchback was one of Ocean's first hits, and now the sequel has arrived. As you will probably guess, Esmeralda has got herself into trouble again and you, being a bit of a hero, have got to guide Quasimodo

through five action-packed screens to rescue her from the Belfry.

On the early screens, Quasi runs and jumps his way round the bell-tower collecting all of the small bells. However, he doesn't have things all his own way. Bats, bouncing cannon balls, moving platforms and ropes all contribute to his problems.

What I like about the game is the control you have over Quasi. Instead of just dropping to the floor with an untimely crunch when you make a mistake, you can guide the Hunchback as he is falling, in the hope of reaching him from the ground.

I know this may sound a bit like all those other platform games, but *Hunchback II* has got a few nice touches (in particular, the macabre fates that await Quasi, should he be unsuccessful, are not for the squeamish).

This game will be of special interest to those who saw the television programme 'Commercial Breaks' which featured the production of *Hunchback II*.

All in all, a good game which lives up to the high standard of its predecessor.

Tom Hussey



Rivetted

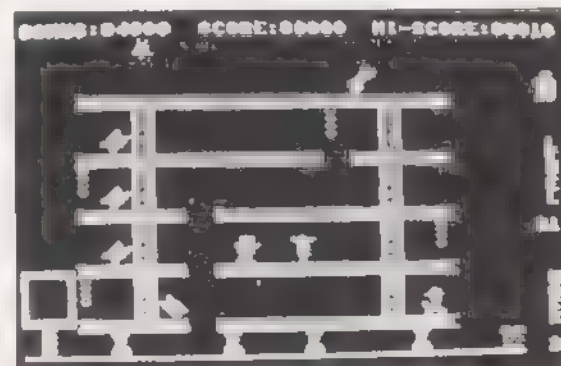
Program Hard Hat Mack Micro Commodore ■ **Price** £9.95 **Supplier** Ariolasoft

This is another piece of top-selling American software with slick graphics and glossy packaging. You are *Hard Hat Mack*, a bona fide spanner-man hero. All you have to do is finish the building. Sounds easy? Well, while you're racing round the girders you have to avoid certain nasty people, namely the neighbourhood punks and Osha. Crew-cut, clip-

gaps in the framework with girders. After accomplishing this, you will have to obtain a rivet-gun in order to rivet the girders into place. Springboards, chains and elevators are available to aid your ascent. All through the play bonus points can be gained by collecting various items of equipment.

On the second screen, a number of toolboxes need to be collected by making your way round the girders, along the conveyor belts and up the hoist.

At the third level you have to get all the steel blocks and drop them into the rivet machines. As on the other levels,



board, and no sense of humour. Osha is 'Living proof of the banality of evil'.

There are six, totally different, platform-like levels in the game, and you are allowed to start on any of the first three (a good idea if you are not a supergamesman).

On the first level, you have to finish the steelwork. This can be achieved by filing the

many nasties will try their hardest to get in your way (including a port-a-potti).

Hard Hat Mack is a true member of the platform family of games. Its novelty lies in a series of 'cute' features which make it fun to play. A good game.

Tom Hussey



Labyrinth

Program *Fantasy Flight* **Price** £8.95 **Micro** Dragon 32 **Supplier** Cable Software, 52 Lambury Rd, Luton, Beds LU3 2PL

Fantasy Flight is a labyrinthine arcade game. The said labyrinth consists of 35 separate rooms each containing its own complement of hazards and rewards. The object is to collect bags of gold and defeat the monsters (20 different varieties) before energy runs out, a bit like *Hall of Things*. To defeat the monsters, it is necessary to have the appropriate weapons or spells.

The game is controlled by



using both joystick and the keyboard, although an option

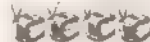
of all keyboard is included. Movement is controlled from the joystick whilst weapons (where available) are obtained by keyboard. To make this easier, an overlay is provided which fits above the numeric keys used each for a specific weapon.

The instruction leaflet is comprehensive but printed in red on bright yellow paper (in minute type to boot) which does not help its legibility.

There is sufficient variation to make the game, once mastered, easy and interesting to play, although the initial moves (which follow a standard pattern) tend to get monotonous with familiarity. The graphics are fussy with a very crowded screen containing the labyrinth room and status data. The effect of being zapped is a bit over the top with flashing colour changes which make the reset screen difficult to absorb quickly.

Overall, the game is absorbing and can hold the interest for quite a while, let down a little only by the display.

Derrick Trueman



Action

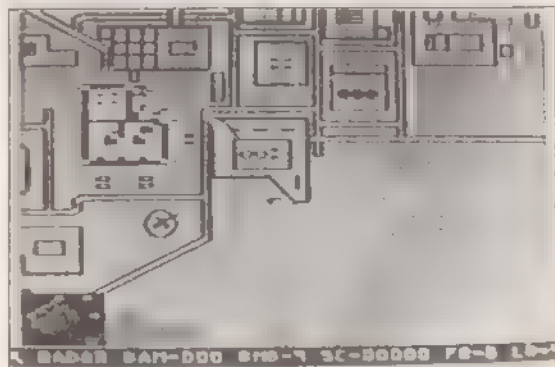
Program *Raid on Bungeling Bay* **Price** £9.95 **Micro** Commodore 64 **Supplier** Ariolasoft Retail.

Carrying on in the same genre as *Beachhead*, this game is a fast-action strategy-shoot-out. You are a "highly skilled helicopter

repairs and more ammunition.

The huge playing area covers 100 screens, and radar is used to reveal enemy positions in the surrounding nine screens. The helicopter controls are very realistic in that your perspective changes with direction as you fly around the 360 degree scrolling screen.

I found the action very fast and furious, especially when



pilot" and have to destroy six war factories of the Bungeling Empire. These can be found amongst a collection of well-protected islands.

Tanks, anti-aircraft guns, battleships and planes have to be engaged and destroyed if you are going to succeed on the mission. The strategic element of the game arises from the need for you to protect your own aircraft carrier from enemy attack - every so often you have to land for

being attacked by jet fighters firing heat-seeking missiles. It really gets the adrenalin going. The price may seem a bit steep, but this can be partly accounted for by the superb graphics that we have come to expect from USA imports. The attractive packaging and first class presentation add up to a truly professional game.

Tom Hussey



Language

Program *Pascal* **Micro** Amstrad CPC 484 **Price** £29.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex, or direct from Hisoft.

Let's start off by saying that I think this is an excellent program and worth every penny of its superficially hefty price, but some people will have difficulty finding a use for it.

Machine code has the advantage of flexibility and speed, but it is an absolute nightmare to reproduce complex statements such as $x = \cos y / ((\text{SORT } m) (\text{LN } z / y))$ or the extensive string handling of adventure programs which can be succinctly expressed using Basic. An ideal compromise for many would be fast compiled languages - Pascal, for example - on home micros. A Ram based system only goes halfway towards solving the problems since it has to be loaded in before you can run

a program.

However, there is one area where this Pascal has an obvious and very important use. Many people justify their purchase of a home computer as an aid to getting a job or helping them with it. But in practice a knowledge of, say, Sinclair, Basic is in little demand. Pascal on the other hand is a widely used professional language and has all the advantages of being designed to encourage structured programming (it was the source of the Procedure command used in BBC Basic) as well as being more rigidly standardised.

Hisoft's version also gives you a useful insight into the way mini- and mainframes often work with separate editors and a great distinction between the operating system and the language - something that comes as a bit of a shock to home micro owners where the whole thing is fused into the Rom.

The fact is it is very different to the sort of programming you will be used to and may seem like wallowing through mud for the first few

days, which is why I regretted the absence of the *Tutorial Guide To Hisoft Pascal* in the review copy. The Amstrad manual we were sent, SOFT 155, is designed to document the features available and is impressively comprehensive in its scope but a little advanced for a newcomer to the language.

The version is an 'almost full' implementation with the major limitation being that, being tape based, files cannot be handled in the normal way

and are replaced by *Tape in* and *Tape out* commands. This is easy to adapt to for those learning the language but could make converting programs from other machines a nuisance. To compensate there are many predefined procedures to enable access to the advanced features of the computer.

Once loaded there is 20K available in which to program which is quite healthy for most things but can limit data handling programs. The tape also carries the marvellous bonus of turtle graphics which can be used within your Pascal programs.

An extremely impressive package.

Tony Kendle



Pot black

Program *Snooker Micro*
Amstrad CPC464 Price £7.95
Supplier Amsoft, Brentwood
House, 169 Kings Road, Brent-
wood, Essex.

Amssoft have slipped out their own version of Snooker in the face of the imminent and long await-

one player practice mode and, if you are as bad at potting as I am, the useful option of playing with as few as six reds. The coloured balls can be numbered on screen for people with a green monitor or who know nothing of the order in which to pot the colours. There is extremely precise control over the strength of shot as well as the ability to add all sorts of spins to the cue ball.



ed release of *Steve Davis Snooker* by CDS. CDS were responsible for the only really fast and playable version of pool for the Spectrum so it will be interesting to see how well Amsoft's attempt compares.

On the positive side, unlike many earlier attempts, this is a full and complex representation of snooker with a strict adherence to the rules, the correct number of balls, and onscreen display of scores, foul shots, etc. There is also a

On the negative side it is a very slow game and because of this is inherently unsatisfactory. When you think about it the number of real time calculations to be made together with the number of moving graphics to control probably make this inevitable. Perhaps a full version of *Snooker* is something that should best be left to Paion on the QL, unless CDS prove me wrong.

Tony Kendle



Child's play

Program *Learning With Leeper* Price £9.95 Micro
Spectrum 48K **Supplier** Software Projects Limited,
Bearbrand Complex,
Allerton Road, Woolton, Liver-
pool L25 7SF.

Leeper is intended for ages three to six, but the packaging also claims 'No adult supervision required'. I would feel less than happy leaving a three year old unsupervised with a computer, and when just one key press returns the child to the title screen, you have a recipe for tears. A bad start.

To the four games them-

the way of reward for a successfully completed task. *Dog Count* is a test in matching the number of bones to dogs. Do this correctly and the dogs wag their tails with an accompanying tune, but give too many bones and you still get the wagging tails. *Balloon Pop* is a letter matching game with even less reward.

Leap Frog's aim is to guide a frog round a simple maze ahead of a pursuing centipede, but as this simply



passes over you if it reaches you there seems to be little point. Finally, *Screen Painting* is a paintbox 'without all the mess' - a classic example of the computer taking over where it is not needed. As this is not overly simple to use it will definitely need parental supervision, unlike paper and crayons.

Doubtless some parents will think that it's never too early to introduce their child to the micro, but at this age a few basic teaching aids and some active parental involvement would prove a lot more effective - and cheaper!

John Minson



Superb

Program *Jewels of Babylon*
Micro Amstrad CPC464
Price £8.00 **Supplier** Inter-
ceptor Micro's, Linden
House, The Green, Tadley,
Hants.

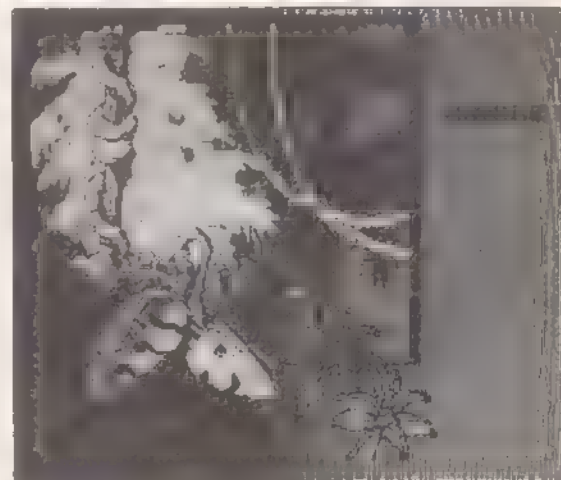
The some companies the term 'graphic adventure' seems to be an excuse to call up a load of slow and intensely boring box-like pictures and use that as an excuse to avoid any pretence of atmosphere in the text. Fortunately Interceptor have gone down a very different road and have built themselves a pretty good reputation for adventures in the process. *Jewels of Babylon* should greatly enhance this image because, in terms

scriptive prose to liven things up.

To be honest it's not Level 9 and you still get annoying sequences like when in the rowboat "ROW SOUTH" - "I DON'T UNDERSTAND", "GO SOUTH" - "TRY ROWING" etc. On the whole though the text handling is pretty reasonable but what about the graphics?

They are absolutely superb, probably the best I've seen, and the colour restraint due to the use of four colour mode somehow adds to their charm. They appear extremely quickly too.

It is a tribute to Interceptor, and I suppose a tribute to Amstrad, that when playing the game in the office everyone who walked past stopped short in admiration and demanded to know what the program was. If Interceptor



of plot, I found it a huge improvement on *Forest at the World's End* which was really quite simple and written in a minimalist style.

Not only are there more, and more interesting, puzzles in this game but the author has also allowed himself the luxury of including the occasional adjective or line of de-

keep this up they can forget about their arcade games.

The other good point is that it is refreshingly cheap for a piece of Amstrad software which may be the start of a trend towards more realistic prices.

Tony Kendle



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publishers of the game

"BACKPACKERS GUIDE TO THE UNIVERSE PART 1"

would like to state that their game is in no way connected with the works of Douglas Adams entitled "Hitchhikers Guide to the Galaxy" or the computer game now being marketed by Infocom Inc., based upon that work.

In order to avoid confusion, the name of Fantasy Software's game has been changed to

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A touch of genie-us

Graham Taylor interviews **Hanan Samara** – proof that games programs aren't all written by adolescent males

Hanan Samara is a computer programmer who also happens to be Arabic, have a Masters degree in Maths, is setting up a software house and significantly or otherwise, is a woman. Whilst women have entered the computer industry doing PR jobs and, here and there, some graphic design, there are few actually programming anywhere and fewer still programming games.

Talking to Hanan she is, interestingly, as confused by her flag-bearing status as anyone else. "For a long time I didn't realise I was one of the few women in this industry, I never thought of it until I was pointed out to me."

Undoubtedly there is a link between the situation in the computer industry and the wider anomaly in the balance between men and women taking science subjects to a high level, but Hanan also sees some differences within computer programming itself. "You need a lot of patience for Assembler language which is vital for games, and it can be pretty tedious unless you have a certain kind of mind. I think there are more women working in high level languages, also in writing for home computers; ie, games where you need to know a lot of little bits and pieces. It may be that that makes some sort of difference."

Hanan first learnt Fortran as a tool for her Masters Degree. "I needed a computer language as part of a punch card scheduling project, then I started work

when Hanan joined Thorn Emu where she was offered a job as program designer and project leader.

She remembers her first experience of a computer game and the enthusiasm she felt then remains now. "I remember it was a child's game based on *Humpty Dumpty*. It was like a little movie and I totally captivated by it."

I asked Hanan to try and explain the appeal of writing computer games. "What excites me most is the way something which forms as an idea in your mind can gradually, with many obstacles to be overcome, become reality."

What is the actual process of game creation. "Well, the first thing is the idea which means the setting, plot and generally the way it works as a game, next comes a storyboard where the sequence of events is worked out and then you can actually design the sprites for the different characters." This, it turns out, is the time consuming process. "Actual coding can happen relatively quickly, except that you find some of your ideas are unworkable or that somehow all the good ideas in your storyboard aren't any good on screen."

Probably the most exciting of the games Hanan has worked on is *Jinn Genie*, a multiscreen game recently issued by Micromega which deserves to do well. It mixes some basic arcade concepts with some original thoughts and some unusual character design.

Arab, a Palestinian, and all the ideas of genies and so on are familiar to me."

The game involves magic carpets, castles, magic keys, genies, baskets in which the genie may be trapped. It looks Arabic in terms of the design, and as a game it plays well – it has been deliberately designed so that it should be possible to get through the whole game at the easiest level after only a few plays, which is, when you come to think about it, rather unusual for an arcade game.

"In designing the whole game I worked backwards; the first idea is that you must put the genie – the freest – into a bottle, then you ask yourself, well, where is the freest? All the themes of the freest, Desert and Bottle came from Sinbad; at first I planned a sea version,



but for various reasons making it land-based gradually seemed a better idea.

"I always make sure it is possible to complete the game quite early on, but gradually it gets more and more difficult – to a certain extent that reflects the fact that most of my previous work has been designed for the States where they don't like things to be too difficult."

The game was produced by Hanan in her latest role as joint owner of Dalali, a company she formed with another ex-Thorn employee Adrian Wadley – the objective is to do contract work on program design and development for other companies as well as conversions from one machine to another of successful games. "Obviously, we'll also produce our own games and I'd like to produce some really good educational software."

Dalali is to concentrate on the Commodore and the Spectrum as Hanan sees little immediate future for other machines. "I haven't even touched a QL because of the microdrives, the Amstrad is a nice looking machine but we won't work with it yet, equally MSX could be OK, but the price will have to come down."

Future projects suggest that Dalali is a company intending to explore some of the less obvious programming routes. "I'd like to do some spin-offs from board games – we're talking to one company in particular."

My attempt to draw Hanan on her projects reveals a reluctant caution.

"Do you know, I never talk about plans too specifically any more. I sometimes think that people's ideas float up in the air and float into other people's heads." Never have I heard plagiarism so poetically described.

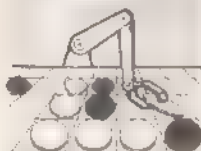


on text editors for International Computer Systems where I also picked up Z80 code." The move to games happened

"Well, *Jinn Genie* is a game that incorporates many of the basic myths and children's stories of my culture – I am an

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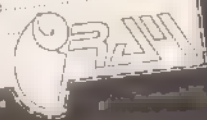
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- ★ An explanation in less than 1,600 words of the program, how it was written, what it does, and what you have tried to achieve.
- ★ Wherever possible we would like you to provide a printed listing of your music program and composition.
- ★ We would also like you to send a cassette tape recording of your composition.

Some guidelines

COMPUTERS are increasingly being used in professional music making and it is possible to link all sorts of

musical instruments to a home micro - drum machines, synths, and so on. The winning entries though will be likely to have been written and played using just an ordinary home micro. You may use any other equipment you wish - for example, a tape recorder to multi-track the finished tape. Any commercially written home micro software packages may also be used, but their use will be taken into consideration.

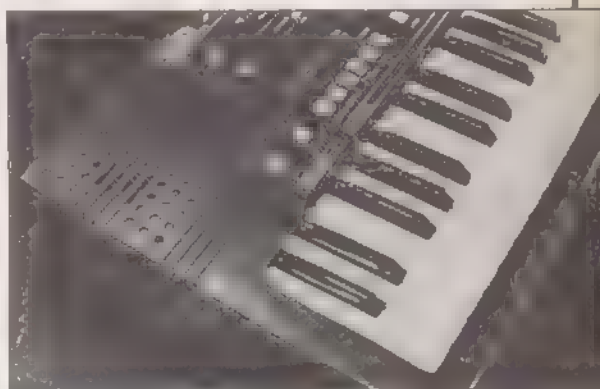
We are looking more for quality of original composition, good ideas, and some programming skill. At the end of the day, though, it must be music to our ears! Different micros have different music facilities and that also will be taken into account. Don't be put off just because your Spectrum isn't very loud!

The Judges

The competition will be judged by a panel of experts which includes:

Thomas Dolby
Vince Hill (Siel)
Mark Jenkins (*Melody Maker*)
Graham Taylor (*Popular Computing Weekly*)

The decision of the judges will be final.



How to enter

TO enter you must fill in the form and send it together with your tape(s), listings and/or discs containing your finished composition and explanatory notes, to: Thomas Dolby's Micro Music Composition, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. At the same time you must also include four out of five special Micro Music vouchers.

All entries must reach us by midday on March 14 and the winners will be announced in April.

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A useful program for the New Year - Moon Calendar
by Maurice Gavin

This program for the ZX Spectrum produces a calendar with a difference. Not only does it give a correct printout for any month from 1950 to 2050, but the phase of the Moon for each day in that month is also drawn. The program correctly shows the day of the week, ie, Sunday, Monday etc, against the date and the total number of days in each selected month including leap-years.

Regarding the Moon's phase, the program has been optimised to give correct results typically within a day of the correct phase. This error will increase to about 2 days towards the year 2050 (if this unduly concerns you!). In reality the motion of the Moon about the Earth is extremely complex so a simple empirical formula from Lines 350 to 390 is used here which is adequate for the purpose.

In the printout to the screen, the waxing or "growing" Moon from new moon to full moon (circular disc) is coloured white (Ink 7). The waning or "shrinking" moon from full to new again is coloured cyan (Ink 5). The young waxing crescent, like a C but backwards, is only visible at dusk in the Western skies while the old waning crescent, like a letter C, will only be seen before dawn in the Eastern skies. Full moon can be seen throughout the night and on these

occasions astronomers forsake their telescopes for indoor pursuits due to the Moon's sky-glare. The new and full moon are the first and last of each monthly cycle that are coloured white in the display via Lines 410 and 420.

Those near tidal waters can use the calendar to predict the tides. As a guide, using London Bridge as an example, high tide occurs within about an hour of 1pm and 1am for both new and full moon. These times get progressively later each day until high tide occurs about 6pm and 6am when the Moon is "half full" like a letter D or D backwards at first and last quarter moon respectively. Times vary dramatically by several hours in different UK ports so consult your local coast-guard station to find the "constant" with reference to London Bridge.

Program Notes

The Boolean logic in the variable *j* gives a modified "julian day" (JD) number for the first day of the selected month. Each day has a unique JD number and in this program it is just used to identify the starting day of the month via the variable *Q*, ie, Sunday, Monday, etc. The variable *Moend* identifies the number of days in the selected month allowing for leap-years at four year intervals. This is used to set the length of the *For/Next d* loop.

The Moon's phase is drawn with two curved lines via variables *P* and *C*. The part of the Moon nearest to the Sun is drawn first as a semicircle via *P* and represents the Moon's limb or edge. The terminator or sunrise/sunset line drawn via *C* varies from a straight line to a semicircle curved to the left or right. The program correctly mimics the foreshortening effect as this terminator line approaches new or full moon. This line advances more rapidly about the quarter moons as the sample displays show.

It will be noted the whole program, except for a couple of title REM statements, has been typed with the Caps Lock set for upper case lettering. Do so by pressing Caps shift and key 2 at the same time. The Rem statements have been set in Inverse Video for clarity only. The program has the option to Copy the calendar on to the ZX printer via Line 850. By the addition of the following extra program line the Spectrum will automatically compute and Copy to the printer a complete calendar for any given year. Input *J* to start month at January. Start program with Run Enter.

515 Lprint: Copy: Cls : Let M= M+1: Go To 80.

The program can be Saved with Go to 600 as a direct command and will autoloat from tape with Load "" or Load "MOONCAL", Enter. The Poke in Line 60 sets the upper case lock so that the Inkey\$ commands (in upper case) in Lines 550 and 560 are identified.

```

10 LET J=1
20 LET N$="MOON CALENDAR"
30 REM Maurice Gavin FRAS
   @ copyright 1984
40 REM ZX Spectrum
50 BORDER 0: PAPER 0: CLS
60 BRIGHT 1: INK 9: POKE 23550
   ,8
70 INPUT "YEAR ";Y;"MTH NO ";M
80 IF Y<1950 OR Y>2050 OR M<12
   OR INT M>M THEN GO TO 70
90 PRINT "JANFEBMARAPR MAYJUNJUL
   AUGSEPOCTNOVDEC (M+3-2 TO M+3);
100 PRINT " ";Y;"N$
110 CIRCLE 243,172,3
120 CIRCLE 247,172,3
130 REM
140 INK 2: FOR F=0 TO 7: PLOT 0
   ,F*24-1: DRAW 255,0: NEXT F
150 FOR F=1 TO 5: PLOT F*40+15,
   0: DRAW 0,166: NEXT F
160 PLOT 0,0: DRAW 0,166: INK 9
170 REM
180 LET C$="202121221212"
190 LET D$="SAT SUN MON TUE WED THU F
   RI"
200 LET MOEND=29+VAL C$(M)-(1 AND
   M=2 AND Y/4<>INT (Y/4))
210 REM
220 LET J=INT (365.25*(Y-(M(3)))
   )+INT (30.6001+(M+1+12*(M(3)))-I
   NT (Y/100)+INT (Y/400))
230 REM
240 LET Q=J-7+INT (J/7)+1
250 INK 8: FOR F=1 TO 7
260 LET OF=Q+F
270 IF OF>7 THEN LET OF=OF-7
280 PRINT AT F*3,0;
290 PRINT D$(3+OF-2 TO 3+OF)

```

```

300 NEXT F
310 REM
320 LET XX=48: LET YY=20
330 FOR D=1 TO MOEND
340 REM
350 LET A=10: LET MO=29,73
360 LET N=VAL "02022446789A" (M)
370 LET PH=(Y-1930)*11-150+N+D-
   1
380 LET PHMO=PH/MO
390 LET PH=(PHMO-INT PHMO)*80
400 REM
410 LET P=PI: INK 7
420 IF PH/MO/2 THEN LET P=-P: I
   NK 5
430 PRINT AT YY/8-1,XX/8-3;(" "
   AND D<10);D
440 LET MO4=MO/4: LET C=PH-MO4
450 IF C/MO4 THEN LET C=C-MO/2
460 PLOT XX+5,165-YY: DRAW 0,20
   ,P
470 DRAW 0,-20,2.5*ATN (PI/180
   )+C*25)
480 REM
490 LET YY=YY+24: IF YY>170 THE
   N LET YY=20: LET XX=XX+48
500 REM
510 NEXT D
520 REM
530 PRINT 80;"PRESS COPY/DATE"
540 DEEP .1,10: PAUSE 0
550 IF INKEY$="C" THEN COPY
560 IF INKEY$="D" THEN RUN
570 GO TO 540
580 REM
ECLIPSE 01: 70 Ardrossan Gardens
Worcester Park, Surrey KT4 7AX.
590
600 SAVE "MOONCAL" LINE 1

```

JAN 1985 MOON CALENDAR (1)

MON	1	8	15	22	29
TUE	2	9	16	23	30
WED	3	10	17	24	31
THU	4	11	18	25	
FRI	5	12	19	26	
SAT	6	13	20	27	
SUN	7	14	21	28	

JUN 1985 MOON CALENDAR (2)

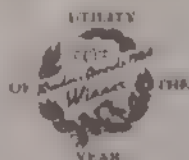
SAT	1	8	15	22	29
SUN	2	9	16	23	30
MON	3	10	17	24	
TUE	4	11	18	25	
WED	5	12	19	26	
THU	6	13	20	27	
FRI	7	14	21	28	

FEB 2024 MOON CALENDAR (3)

THU	1	8	15	22	29
FRI	2	9	16	23	
SAT	3	10	17	24	
SUN	4	11	18	25	
MON	5	12	19	26	
TUE	6	13	20	27	
WED	7	14	21	28	

Variable Names:-

NB program title
 Y year (INPUT)
 M month (INPUT)
 CS modulo+28=days in month
 DS days of week
 MOEND month end day no
 J Julian day no
 O day of week no
 OP 1 to 7 day nos
 XX print/plot horiz coords
 VY print/plot vertic coords
 D days in month (if in loop)
 R moon (modulo code)
 MO moon's period in days
 N modulo moon to month
 PM moon's phase in days
 P +/-Pis moon's lib
 C moon's sunrise/set line



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Taking a chance

Chance your luck at dice throwing with your CPC 464

by Bill Simlster

You have got into a game of throwing dice with your new Amstrad computer. An interested passer-by peers over the wall at each of the throws.

This program is simple, but shows how easy it is to make UDGs on the Amstrad. It also serves to show how to produce random results very easily, and

gives a simple routine for the use of inputs.

Program Notes

10-70

Sets the colours, and introduces Cosub routines.

100-360

Throws the dice (randomly) at one side.

360-670

Converts the dice back to num-

bers for scoring, and prints them.

1300-1360

Plays a tune; prints the score; and changes the dice-throwing location, as well as the passer-by.

1360-1570

Throws the second set of dice (randomly) at the other side.

1580-1640

Converts the dice back to numbers, and prints them.

2000-2040

Plays a tune; prints the score; and decides who is the winner.

4000-4180

Offers another game, and re-arranges the scene for the next game.

8000-8190

Produces the screen lay-out. Produces the characters.

```

10 REM DICE THROWING
20 REM * * * * *
30 BORDER 9: INK 1,0: INK 0,22: CLS
60 GOSUB 5000
70 GOSUB 4000
100 REM *GAME*
110 REM * * * *
120 PEN 3:LOCATE 12,8:PRINT CHR$(249):CHR$(250)
130 PEN 1:LOCATE 12,9:PRINT CHR$(251):CHR$(252)
300 AS=CHR$(241)+CHR$(242)+CHR$(243)+CHR$(244)+
CHR$(245)+CHR$(246)
310 RANDOMIZE TIME
320 M=INT(RND*6)+1
330 N=INT(RND*6)+1
340 O=INT(RND*6)+1
350 FOR X=1 TO 12:LOCATE X,11:PRINT " ",MID$(AS,
M,1):FOR Y=0 TO 20:NEXT Y:NEXT X
360 IF M=1 THEN LOCATE 11,2:PRINT 1
370 IF M=2 THEN LOCATE 11,2:PRINT 2
380 IF M=3 THEN LOCATE 11,2:PRINT 3
390 IF M=4 THEN LOCATE 11,2:PRINT 4
400 IF M=5 THEN LOCATE 11,2:PRINT 5
410 IF M=6 THEN LOCATE 11,2:PRINT 6
420 SOUND 1,50,20
430 FOR X=1 TO 11:LOCATE X,13:PRINT " ",MID$(AS,
N,1):FOR Y=0 TO 20:NEXT Y:NEXT X
440 IF N=1 THEN LOCATE 13,2:PRINT "+1"
450 IF N=2 THEN LOCATE 13,2:PRINT "+2"
460 IF N=3 THEN LOCATE 13,2:PRINT "+3"
470 IF N=4 THEN LOCATE 13,2:PRINT "+4"
480 IF N=5 THEN LOCATE 13,2:PRINT "+5"
490 IF N=6 THEN LOCATE 13,2:PRINT "+6"
500 SOUND 1,100,20
510 FOR X=1 TO 13:LOCATE X,15:PRINT " ",MID$(AS,
O,1):FOR Y=0 TO 20:NEXT Y:NEXT X
520 IF O=1 THEN LOCATE 15,2:PRINT "+1"
530 IF O=2 THEN LOCATE 15,2:PRINT "+2"
540 IF O=3 THEN LOCATE 15,2:PRINT "+3"
550 IF O=4 THEN LOCATE 15,2:PRINT "+4"
560 IF O=5 THEN LOCATE 15,2:PRINT "+5"
570 IF O=6 THEN LOCATE 15,2:PRINT "+6"
580 SOUND 1,150,20:FOR X=0 TO 20:NEXT X
590 A=M+N+O:LOCATE 17,2:PRINT " =A"
600 LOCATE 3,22:PRINT "YOUR GO NOW."
610 PEN 3:LOCATE 2,25:PRINT "PRESS M FOR DICE "
:PEN 1
615 LS=INKEY$: IF LS="" THEN GOTO 615
620 IF LS="M" OR LS="m" THEN LOCATE 2,22:PRINT
" "
:LOCATE 2,25:PRINT
" "
630 LOCATE 12,8:PRINT " " :LOCATE 12,9:PRINT CH
R$(248):CHR$(249)
640 PEN 3:LOCATE 24,8:PRINT CHR$(249):CHR$(250)
:PEN 1:LOCATE 24,9:PRINT CHR$(251):CHR$(252)
1300 AS=CHR$(241)+CHR$(242)+CHR$(243)+CHR$(244)+
+CHR$(245)+CHR$(246)
1310 RANDOMIZE TIME

```

```

1320 P=INT(RND*6)+1
1330 Q=INT(RND*6)+1
1340 R=INT(RND*6)+1
1350 FOR X=40 TO 26 STEP-1:LOCATE X,11:PRINT
MID$(AS,P,1):" " :FOR Y=0 TO 20:NEXT Y:NEXT X
1360 IF P=1 THEN LOCATE 11,4:PRINT 1
1370 IF P=2 THEN LOCATE 11,4:PRINT 2
1380 IF P=3 THEN LOCATE 11,4:PRINT 3
1390 IF P=4 THEN LOCATE 11,4:PRINT 4
1400 IF P=5 THEN LOCATE 11,4:PRINT 5
1410 IF P=6 THEN LOCATE 11,4:PRINT 6
1420 SOUND 1,50,20
1430 FOR X=40 TO 25 STEP-1:LOCATE X,13:PRINT
MID$(AS,Q,1):" " :FOR Y=0 TO 20:NEXT Y:NEXT X
1440 IF Q=1 THEN LOCATE 13,4:PRINT "+1"
1450 IF Q=2 THEN LOCATE 13,4:PRINT "+2"
1460 IF Q=3 THEN LOCATE 13,4:PRINT "+3"
1470 IF Q=4 THEN LOCATE 13,4:PRINT "+4"
1480 IF Q=5 THEN LOCATE 13,4:PRINT "+5"
1490 IF Q=6 THEN LOCATE 13,4:PRINT "+6"
1500 SOUND 1,100,20
1510 FOR X=40 TO 27 STEP-1:LOCATE X,15:PRINT
MID$(AS,R,1):" " :FOR Y=0 TO 20:NEXT Y:NEXT X
1520 IF R=1 THEN LOCATE 15,4:PRINT "+1"
1530 IF R=2 THEN LOCATE 15,4:PRINT "+2"
1540 IF R=3 THEN LOCATE 15,4:PRINT "+3"
1550 IF R=4 THEN LOCATE 15,4:PRINT "+4"
1560 IF R=5 THEN LOCATE 15,4:PRINT "+5"
1570 IF R=6 THEN LOCATE 15,4:PRINT "+6"
1580 SOUND 1,150,20:FOR X=0 TO 20:NEXT X
1590 B=P+Q+R:LOCATE 17,4:PRINT " =B"
1600 IF A=B THEN LOCATE 2,17:PRINT "IT'S A DRAW"
1610 IF A>B THEN LOCATE 2,17:PRINT "YOU WIN" KX
=KX+1:LOCATE 32,24:PRINT KX
1620 IF A>B THEN LOCATE 2,17:PRINT "I WIN" JX=
JX+1:LOCATE 32,22:PRINT JX
1630 FOR X=100 TO 50 STEP -5:SOUND 1,X,10:NEXT X
1640 FOR X=50 TO 100 STEP 5:SOUND 1,X,10:NEXT X
2000 PEN 3:LOCATE 2,21:PRINT "PRESS P TO GO AGA
IN":PEN 1
2005 PS=INKEY$: IF PS="" THEN GOTO 2005
2010 IF PS="P" OR PS="p" THEN LOCATE 11,2:PRINT
" "
:LOCATE 11,4:PRINT " "
:LOCATE 2,21:PRINT " "
:LOCATE 2,17:PRINT " "
2020 LOCATE 13,11:PRINT " " :LOCATE 12,13:PRINT
" " :LOCATE 14,15:PRINT " " :LOCATE 25,11:PRINT
" " :LOCATE 24,13:PRINT " " :LOCATE 26,15:PRINT
" "
2030 LOCATE 24,8:PRINT " " :LOCATE 24,9:PRINT C
HR$(248):CHR$(249)
2040 GOTO 100
4000 REM SCENE
4010 REM * * *
4020 PEN 3:LOCATE 28,2:PRINT " *THROWING*"
4030 LOCATE 29,3:PRINT " * * * "
4040 LOCATE 30,4:PRINT " *DICE*"

```

```

4050 PEN 1:LOCATE 26,20:PRINT "TOTAL SCORE"
4060 LOCATE 27,22:PRINT "MINE."
4070 LOCATE 26,24:PRINT "YOURS-"
4080 JX=0: KX=0
4090 LOCATE 32,22: PRINT JX
4100 LOCATE 32,24: PRINT KX
4110 FOR Y=9 TO 18:LOCATE 18,Y: PRINT CHR$(247):
LOCATE 21,Y: PRINT CHR$(247): NEXT Y
4120 FOR X=1 TO 17:LOCATE X,9:PRINT CHR$(248):NEXT X
4130 FOR X=22 TO 40:LOCATE X,9:PRINT CHR$(248):NEXT X
4140 LOCATE 2,2:PRINT "MY SCORE:"
4150 LOCATE 5,4:PRINT "YOURS:"
4160 RETURN
5000 REM GRAPHICS
5010 REM * * * * *
5020 SYMBOL AFTER 240
5030 SYMBOL 241,255,255,255,231,255,255,255,0: REM DICE 1
5040 SYMBOL 242,255,249,255,255,255,159,255,0: REM DICE 2
5050 SYMBOL 243,255,249,255,231,255,159,255,0: REM DICE 3
5060 SYMBOL 244,255,153,255,255,255,153,255,0: REM DICE 4
5070 SYMBOL 245,255,153,255,231,255,153,255,0: REM DICE 5
5080 SYMBOL 246,255,153,255,153,255,153,255,0: REM DICE 6
5090 SYMBOL 247,85,170,85,170,85,170,85,170: REM SIDE WALL
5100 SYMBOL 248,255,170,85,255,170,186,170,238: REM TOP WALL
5110 SYMBOL 249,7,48,32,32,64,76,76,129: REM LEFT FACE
5120 SYMBOL 250,240,48,4,4,2,58,50,1: REM RIGHT FACE
5130 SYMBOL 251,252,172,84,255,170,186,170,238: REM WALL NOSE
5140 SYMBOL 252,63,42,53,255,170,186,170,238: REM NOSE WALL
5150 RETURN
5999 STOP

```

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Minimum points

Graph plotting with tears on the BBC B with the aid of Michael Poyner

All 'A' Level students of mathematics will know the pleasure/tedium of graph sketching a formula $y=f(x)$. One way of finding the shape of a graph is to pick some points, work out the corresponding y values and plot them on the axes. The trouble is how do you know how to join them together? Unless you take a lot of points you could get two points either side of a hump and mistake it for a straight line.

Another way is to observe when y values are very big, small, positive and negative. In addition to this, one must look for asymptotes (where the line gets closer to a particular value but never reaches it), maxima (humps) and minima (troughs). This is done using the process

called 'differentiation'. This is re-arranging the formula in a special way and then finding when the new formula is zero. I will not go into the theory of this method but it takes a long time.

The computer program uses the first method because it is by far the easiest to reduce the process to repeated logical operations. Every point chosen along the x -axis represents a single pixel, so 1279 values are chosen. By hand, this would take a long time even with a pocket calculator. The computer however takes only a few seconds to a minute depending on the complexity of the formula. The program takes each point, works out the y value and displays it on the screen to the nearest pixel. Even

with high-resolution graphics, there will be gaps between these points - especially on a steep line - so a straight line is drawn between adjacent points to give the impression of a smooth curve.

The gap between the values put into the equation is calculated when the limits on the axes are entered, eg, if the x -axis starts from -6 and ends at 10, then the step between x values is $16/1279 = .0125$, which as a general formula is $(X2 - X1)/1279$. The computer can then draw the axes on the screen by calculating where zero would be in each direction. The lines are calibrated by marking every unit with a small gap in black. Now the drawing of the graph takes place. For all the x values, the formula is calculated at line 300 and the answer is scaled and positioned on the axes using the ratio between the number of pixels and the limits of the axes.

The user can then continue by pressing any key and has the option to draw the graph again with the axes enlarged or reduced.

```

4 REM *****
5 REM *
6 REM * PROGRAM TO DRAW *
7 REM * THE GRAPH OF *
8 REM * MATHEMATICAL *
9 REM * FUNCTION y=f(x) *
10 REM * *
11 REM * (C) MICHAEL POYNER *
12 REM * *
13 REM *****
14 REM *****
15 REM *****
16 LET F=0 : LET FP=0 : LET AS=""
17 MODE 1
18 PRINT TAB(10,5);"GRAPH PLOTTER PROGRAM"
19 PRINT TAB(10,6);"-----"
20 PRINT
21 PRINT TAB(3,15);"Do you want to see the"
22 PRINT TAB(3,15);"INSTRUCTIONS?"
23 PRINT TAB(3,15);"on how to use this"
24 PRINT TAB(3,15);"program?"
25 PRINT:PRINT
26 INPUT "PLEASE ENTER <Y>ES OR <N>O ";A$
27 IF A$="" THEN GOTO 36
28 IF LEFT$(A$,1)="Y" THEN GOSUB 2000:GOTO 40
29 IF LEFT$(A$,1)="N" THEN GOTO 100
30 GOTO 36
31 INPUT "LOWER LIMIT FOR X-AXIS ";X1
32 INPUT "UPPER LIMIT FOR X-AXIS ";X2
33 IF X1>X2 THEN 140
34 PRINT " ** LOWEST FIRST PLEASE **"
35 GOTO 100
36 IF A$="X" THEN 200
37 INPUT "LOWER LIMIT FOR Y-AXIS ";Y1
38 INPUT "UPPER LIMIT FOR Y-AXIS ";Y2
39 IF Y1>Y2 THEN 200
40 PRINT " -> LOWEST FIRST PLEASE * "
41 GOTO 150
42 LET RX=(X2-X1)/1279
43 LET RY=(Y2-Y1)/1023
44 GOSUB 1000
45 REM *** RED INK - CURSOR OFF ***
46 GCOL 0.1 : VDU 23;B202;0;0;0;0;
47 FOR X=X1 TO X2 STEP RX#2
48 LET Y=XXXXXX-5*XX-X+1
49 IF Y>0 THEN PRINT TAB(0,1);":":
50 IF Y<0 THEN PRINT TAB(0,1);":":
51 IF Y=0 THEN PRINT TAB(0,1);":":
52 LET XC=(X-X1)/RX
53 LET YC=(Y-Y1)/RY
54 IF F=0 THEN FP=1 ELSE FP=0
55 IF XC<0 OR XC>1279 OR YC<0 OR YC>1023
56 THEN LET F=0 ELSE LET F=1
57 IF X=X1 THEN MOVE XC,YC
58 IF F=1 AND FP=1 THEN MOVE XC,YC: PLOT
59 S,XC,YC
60 IF FP=0 THEN PLOT S,XC,YC
61 NEXT X
62 LET A=INKEY(5)
63 IF A=-1 THEN 305
64 PRINT TAB(1,30);
65 INPUT "Do you want to redraw the graph"
66 "A$
67 IF LEFT$(A$,1)="Y" THEN 405
68 IF LEFT$(A$,1)="N" THEN 900
69 GOTO 350
70 PRINT " Do you want to change either"
71 " limits on x and y axes?"
72 PRINT "Enter <X> , <Y> , <BOTH> or"
73 "N E I T H E R"
74 INPUT "X,Y,B OR N ";A$
75 IF A$="" THEN 425
76 IF LEFT$(A$,1)="X" OR LEFT$(A$,1)="B"
77 THEN 100
78 IF LEFT$(A$,1)="Y" THEN 150
79 IF LEFT$(A$,1)="N" THEN 215
80 GOTO 420
81 STOP
82 REM
83 REM
84 CLS:GCOL 0.3
85 IF Y1>0 OR Y2<0 THEN 1050
86 MOVE 0,-Y1/RY
87 PLOT 1,1279,0
88 IF X2-X1>100 THEN 1040
89 LET Y=-Y1/RY
90 FOR I=(1/RX)*(ABS(X1)-(INT(ABS(X1))))
91 TO 1279 STEP 1/RX
92 GCOL 0.0:PLOT 70,I,Y:GCOL 0.3
93 NEXT I
94 IF X1>0 OR X2<0 THEN 1100
95 MOVE -X1/RX,0
96 PLOT 1,0,1023
97 IF Y2-Y1>80 THEN 1100
98 LET X=-X1/RX
99 FOR I=(1/RY)*(ABS(Y1)-(INT(ABS(Y1))))
100 TO 1023 STEP 1/RY
101 GCOL 0.0:PLOT 70,X,I:GCOL 0.3
102 NEXT I
103 RETURN

```

```

1995 REM
1996 REM * SUBROUTINE TO PRINT *
1997 REM * OUT INSTRUCTIONS *
1998 REM
2000 CLS
2005 PRINT TAB(9,3);"I N S T R U C T I O N S"
2010 PRINT TAB(9,4);"-----"
2015 PRINT
2020 PRINT TAB(1,8);"To set a function : "
2022 PRINT TAB(1,9);"-----"
2025 PRINT TAB(10,11);"Re-write line 300"
2030 PRINT TAB(4,14);"IN BASIC - In the form : y = f(x)"
2035 PRINT TAB(7,16);"e.g. 300 LET Y = X*X*X-5*X"
2040 PRINT TAB(4,19);"Then RUN the program."
2050 PRINT TAB(5,31);
2055 INPUT "PRESS <ENTER> TO CONTINUE ...",A$
2060 CLS
2065 PRINT TAB(5,3);"Then enter the limits on the"
2070 PRINT TAB(5,5);"X and Y axes when requested."
2080 PRINT TAB(5,8);"Manipulating these figures you can"
2090 PRINT TAB(5,10);"zoom in on any part of the graph."
2100 PRINT TAB(10,13);"The computer will then draw the function"
2105 PRINT TAB(0,15);"and wait until a key is pressed."
2110 PRINT TAB(1,18);"You can then opt to redraw the graph"
2112 PRINT TAB(11,20);"With different limits on the axes."
2120 PRINT TAB(5,23);"BUT NOW... If you want to put in "
2125 PRINT TAB(5,25);"another function; press <ESCAPE>"
2130 PRINT TAB(5,27);"Rewrite line 300 and RUN again."
2135 PRINT TAB(5,30);
2140 INPUT "Press <ENTER> to continue...",A$
2150 CLS
2155 PRINT TAB(5,3);"Do you want to see these "
2160 PRINT TAB(5,5);"INSTRUCTIONS again ?"
2165 PRINT TAB(5,7);"Please enter <Y>es or <N>o to "

```

```

2167 PRINT TAB(5,9);
2170 INPUT "input the limits on the
axes...",A$
2180 PRINT : PRINT
2200
2400 RETURN

```

SPECTRUM

GAME	RRP	OUR PRICE
DALEY THOMPSON	6.90	4.99
BEACHHEAD	7.95	5.95
WHITE LIGHTNING	14.95	10.50
SHERLOCK HOLMES	14.95	9.99
KNIGHTS LORE	9.95	8.95
UNDERWORLD	9.95	8.95
LORDS OF MIDNIGHT	9.95	5.95
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STAR STRIKE	5.95	4.50
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BACK PACKERS GUIDE TO	7.50	4.95
QUASIMODOS REV	6.90	4.80
TIR NA NOG	9.95	8.95
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PYJAMARAMA	6.95	5.25
BLUE MAX	7.95	5.90
MACHINE LIGHTNING	19.95	4.95
MONTY INNOCENT	6.95	5.50
TECHNICIAN TED	6.95	5.50
ZAXXON	7.95	5.95
*VU CALC	9.95	4.00
*VU FILE	9.95	4.00
*JACK AND BEANSTALK	5.95	2.75
GREAT SPACE RACE	14.95	11.25
POTTY PIGEON	8.95	5.25
PITFALL II	7.95	5.95
VALKYRIE 17	9.95	5.95
RAM TURBO INTERFACE		18.00



MATCH POINT	7.95	6.50
GIFT OF THE GODS	9.95	7.95
TRIPODS	11.50	7.50
BOULDER DASH	7.95	5.95
SPIDERMAN	9.95	6.99
GHOSTBUSTERS	9.95	7.50

COMMODORE 64

GAME	RRP	OUR PRICE
GHOSTBUSTERS	10.95	8.50
SUICIDE EXPRESS	7.95	6.50
OTHER ACTIVISION	9.95	7.25
ZIM SALA BIM	9.95	6.95
STRIP POKER	9.95	8.95
PSYTRON 64	7.95	8.25
TALES OF ARABIAN NIGHTS	7.00	3.75
BEACHHEAD	9.95	7.60
SOLO FLIGHT	14.95	11.00
DEATH STAR INTERCEPTOR	9.95	7.50
BRUCE LEE	9.95	7.50
NATO COMMANDER	9.95	7.50
SPITFIRE ACE	9.95	7.50
MY CHESS II	11.95	8.25
BATTLE FOR MIDWAY	8.95	4.95
QUASIMODOS REVENGE	7.90	5.90
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SUMMER GAMES	14.95	10.50
SHERLOCK	14.95	10.50
PSI WARRIOR	9.95	5.99
RAID OVER MOSCOW	9.95	7.50
STAFF OF KARNATH	9.95	7.25
BLUE MAX	9.95	7.50
TAPPER	9.95	7.50
SELECT 1	12.49	9.50
SPY VS SPY	9.95	7.50
BOULDER DASH	8.95	7.25
HOBBIT	14.95	9.99
DALEY THOMPSONS DECATH	7.90	5.25
KONG'S REVENGE	7.90	5.90
FIGHTER PILOT	9.95	7.50

BREAKFEVER	7.00	4.95
COMBAT LYNX	8.95	6.95
WHITE LIGHTNING	18.95	15.95
SPIDERMAN	9.95	6.99
CAD CAM WARRIOR	9.95	7.50
F15 STRIKE EAGLE	14.95	11.70
MOTOCROSS	7.95	5.80
SUICIDE STRIKE	7.95	5.80
SPY HUNTER	9.95	7.50
IMPOSSIBLE MISSION	8.95	6.75
CASTLE OF TERROR	9.95	7.50
EMPIRE OF KHAN	7.00	4.95
SHOOT THE RAPIDS	7.95	6.50

COMMODORE 16

GAME	RRP	OUR PRICE
SLIPPERY SID		8.95 4.95
GAMES PACK 1		8.95 4.95
GAMES PACK 2		6.95 4.95
OLYMPIAD		6.95 4.95
SKRABLE		6.95 4.95
FLIGHTPATH 737		6.95 4.95
ZODIAC		6.95 4.95
MOON BUGGY		6.95 4.95
OUT ON A LIMB		6.95 4.95
TOM THUMB		6.95 4.95
GALAXIAN		6.95 4.95
MUNKEY MAGIC		6.95 4.95
JUNGLE QUEST		6.95 4.95
RIG ATTACK		6.95 4.95
TYNSOFT 4 PACK		14.95 10.50

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PD73

Measure for measure

A self-scaling graph utility for the Commodore 64
by Peter Graves

For most bargraph plotting programs you need to know the maximum value of the data to be plotted before you start. The scale value can then be set so that all data values can be included on the graph. With *Autobar* the scale values are set automatically to suit the data, so numerical data from any source can be used without worrying whether the bar graph will go over the ends of the scale.

The program is designed to be part of more elaborate data gathering programs. Ten input channels are available and the raw data is held in an array so that their exact values can be retrieved later (the bar graph is a low resolution device).

When a new value enters an input channel it is added to the old value and the bar for that channel is plotted, unless the new value would take the bar over the edge of the screen. In this case, the scale value is recalculated and the whole graph is replotted. Additionally, the value of each bar (strictly, INT(value)) is printed at the end of each bar for instant comparison. The input data can be positive, negative or zero; negative or zero values are not plotted but they are printed out next to the Y-axis.

The maximum value of any bar is set by the biggest number that can be printed at the end of a bar of maximum length without going over the edge of the screen. This is one of four digits and if any value exceeds 9999 then the graph is cleared and the values of all the channels are printed out. If the part of the program that prints the numbers is removed then the maximum value can be increased. To remove the values printed at the ends of the bars: Remove Lines 1120, 1140, 1230-1280, 2000-2100 and change 1300 to: 1300 FOR N=F+G TO 1143+(M-1)

Program Notes

The program is structured into self contained subroutines that are called as required. For demonstration two methods of inputting data are included, selected by a menu.

Line No
1000-1070 Print menu, get selection, draw graph and insert initial X-axis values, jump to selected input module.
1100-1310 The subroutine that plots the bars on the graph.
1120 If the array value being processed exceeds 9999 then GOTO the End routine (see notes above).
1130 If the array value being pro-

cessed exceeds the current highest X-axis value then (temporarily store the array subscript and call up the reploting routine.

1140 The array value being processed as a string before being printed out at the end of the bar.

1150-1160 If the array value is negative no bar is plotted but its value is printed out next to the Y-axis.

1170-1200 Using the current highest X-axis value, scale the array value and plot it by Poking inverse squares onto the correct line of the graph.

1210-1300 Print the array value after the bar by Poking each character along the same line as the bar and fill the rest of the line with spaces to erase any printing left over after a replot.

1300-1570 Recalculates the X-axis value in steps of 30 until the X-axis value is higher than the array value being processed. Replot the whole graph with the revised value by calling up the plot rou-

1600-1720

1800-1990

2000-2100

2200-2360

2400-2490

time for each array value in turn. Convert the X-axis values to strings and Poke them, character by character, downwards in the correct positions.

Initial setting up. Draw and label the graph axes, Poke the colour memory within the area with alternate lines of red and yellow from the Y-axis to the screen edge. Set up the initial X-axis value and the array. Print the X-axis values.

The End routine. Clears the screen and prints out the full values of all the array variables if any array value exceeds 9999 (see notes above).

Input Module 1 - manual input. The number of the bar to be changed is selected followed by the value to be added to it. The appropriate array value is updated and the bar is replotted. The process is repeated.

The data is read from the data blocks in Lines 2480 and 2490. The data is held as pairs of numbers in the form: Bar Number, Data. Each pair is read in turn, the array is updated and the appropriate bar is plotted. When all the data has been read the data pointer is *Restored* and the blocks are read again for as long as required

```

10 REM *****
11 REM *
12 REM * AUTO BARGRAPH *
13 REM *
14 REM * EV *
15 REM *
16 REM * PETER GRAVES *
17 REM *
18 REM *****
19 REM
20 REM
2100 REM*****DEMO*****
2110 PRINT "*****DEMONSTRATION*****"
2120 PRINT "MANUAL INPUT"
2130 PRINT "OR INPUT FROM DATA BLOCK"
2140 INPUT "ENTER 1 OR 2 " CH
2150 IF CH=1 OR CH=2 THEN 1900
2160 GOSUB 1600 GOSUB 1690 REM DRAW THE
2170 ON CH GOTO 2200,2400:REM GOTO
2180 REM*****
2190 REM PLOT GRAPH
2200 IF A[M]>9999 THEN 2000
2210 IF A[M]<0 THEN D=M GOSUB 1500 M=D
2220 E$=STR$(INT(A[M]))
2230 F=1110+(M-1)*40
2240 IF A[M]<0 THEN POKE F,45:F=F+1:GOTO 1210
2250 D=INT(A[M]*30/X)
2260 FOR N=F TO F+D-1
2270 POKE N,32
2280 NEXT
2290 RETURN
2300 REM*****
2310 REM PLOTS GRAPHS FOR NEW X-AXIS
2320 X=X+30 IF A[M]>X THEN 1520
2330 GOSUB 1600
2340 FOR M=1 TO 10
2350 GOSUB 1100
2360 NEXT

```

GRAPH. PUT IN X-AXIS VALUES
SELECTED INPUT MODULE

VALUE

Making plans . . .

No excuse for missed birthdays now with the Mini-Planner from A Beadle

This programme prints a whole year calendar aligned against the days of the week. The dates are held in an array (cal). The zero element of the array holds the element number of the first day of the month. A parallel string array (inf\$) consists of elements which are in the form; "PBeggy's Birthday"

The maximum length of the string is 17 characters. The first character of the string is a key signifying, say, "Rent

due" and which occurs at regular intervals. The next 2 characters are the first two capitals in the remainder of the string, repeated. The programme prints these three characters on the whole-year display. There is the option to print any three months of the year only. In this case the whole string apart from the two initials is printed.

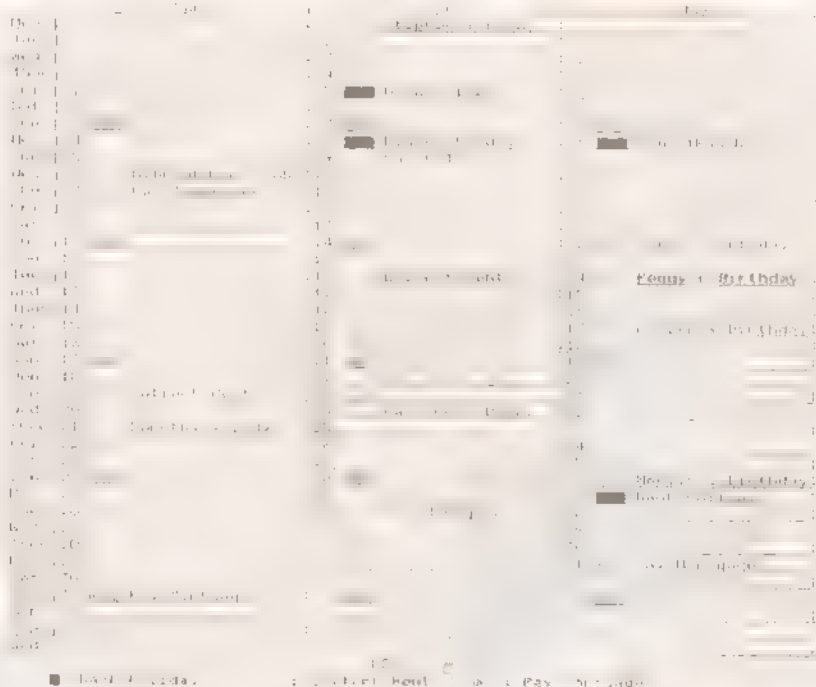
A data file has first to be set up. Use Lines 8000 onwards. A sample file is shown in List 3 to be printed next week.

The data is month, day, information. Write the file and save it in mdv as "???-data" (??? can be anything and any length).

Lines 110 to 150 check to see if any such data file has already been merged, and if so it is deleted in Line 180. The required file is then merged in Line 280. Incidentally this line will not work if it is in a Procedure or Gosub.

Lines 300 to 360 give the choice of setting up a new calendar or loading one already saved. On the initial run you must use the New Year option and can later save this array.

We continue next week with the remainder of the listing and program notes.



```

100 RESTORE
110 REPEAT loop
120 IF EOF: EXIT loop
130 READ check$
140 END REPEAT loop
150 IF check$ = "N" THEN GOTO 10000 TO 10000
160 CLS: MODE AT: CLS: CLS
170 DATA "Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Aug", "Sep", "Oct", "Nov", "Dec"
180 DATA "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12"
190 DIM data$(12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12)
200 RESTORE
210 FOR i = 0 TO 12: READ data$(i, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
220 FOR i = 1 TO 12: READ data$(i, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1)
230 CLS: AT 10: INPUT "What year do you want? " year$
240 INPUT "Initials of data reference limits "
250 LET file_name$ = "mdv" + " " + year$ + " " + initials + ".planner"
260 LET data$ = mdv$ + " " + initials + " " + data$
270 MERGE data$
280 PAPER 0: CLS
290 AT 5,0: PRINT "N" to start New Year"
300 PRINT " "
310 REPEAT loop
320 IF KEYWORD(1) = "N" THEN GOTO 10000 TO 10000
330 PRINT " "
340 IF KEYWORD(2) = "L" THEN GOTO 10000 TO 10000
350 PRINT " "
360 IF KEYWORD(3) = "P" THEN GOTO 10000 TO 10000
370 PRINT " "
380 IF KEYWORD(4) = "M" THEN GOTO 10000 TO 10000
390 PRINT " "
400 IF KEYWORD(5) = "S" THEN GOTO 10000 TO 10000
410 PRINT " "
420 IF KEYWORD(6) = "E" THEN GOTO 10000 TO 10000
430 PRINT " "
440 IF KEYWORD(7) = "H" THEN GOTO 10000 TO 10000
450 PRINT " "
460 IF KEYWORD(8) = "A" THEN GOTO 10000 TO 10000
470 PRINT " "
480 IF KEYWORD(9) = "X" THEN GOTO 10000 TO 10000
490 IF KEYWORD(10) = "I" THEN GOTO 10000 TO 10000
500 IF KEYWORD(11) = "O" THEN GOTO 10000 TO 10000
510 IF KEYWORD(12) = "U" THEN GOTO 10000 TO 10000
520 IF KEYWORD(13) = "D" THEN GOTO 10000 TO 10000
530 IF KEYWORD(14) = "Y" THEN GOTO 10000 TO 10000
540 IF KEYWORD(15) = "N" THEN GOTO 10000 TO 10000
550 IF KEYWORD(16) = "E" THEN GOTO 10000 TO 10000
560 IF KEYWORD(17) = "X" THEN GOTO 10000 TO 10000
570 IF KEYWORD(18) = "I" THEN GOTO 10000 TO 10000
580 IF KEYWORD(19) = "O" THEN GOTO 10000 TO 10000
590 IF KEYWORD(20) = "U" THEN GOTO 10000 TO 10000
600 IF KEYWORD(21) = "D" THEN GOTO 10000 TO 10000
610 IF KEYWORD(22) = "Y" THEN GOTO 10000 TO 10000
620 IF KEYWORD(23) = "N" THEN GOTO 10000 TO 10000
630 IF KEYWORD(24) = "E" THEN GOTO 10000 TO 10000
640 IF KEYWORD(25) = "X" THEN GOTO 10000 TO 10000
650 IF KEYWORD(26) = "I" THEN GOTO 10000 TO 10000
660 IF KEYWORD(27) = "O" THEN GOTO 10000 TO 10000
670 IF KEYWORD(28) = "U" THEN GOTO 10000 TO 10000
680 IF KEYWORD(29) = "D" THEN GOTO 10000 TO 10000
690 IF KEYWORD(30) = "Y" THEN GOTO 10000 TO 10000
700 IF KEYWORD(31) = "N" THEN GOTO 10000 TO 10000
710 IF KEYWORD(32) = "E" THEN GOTO 10000 TO 10000
720 IF KEYWORD(33) = "X" THEN GOTO 10000 TO 10000
730 IF KEYWORD(34) = "I" THEN GOTO 10000 TO 10000
740 IF KEYWORD(35) = "O" THEN GOTO 10000 TO 10000
750 IF KEYWORD(36) = "U" THEN GOTO 10000 TO 10000
760 IF KEYWORD(37) = "D" THEN GOTO 10000 TO 10000
770 IF KEYWORD(38) = "Y" THEN GOTO 10000 TO 10000
780 IF KEYWORD(39) = "N" THEN GOTO 10000 TO 10000
790 IF KEYWORD(40) = "E" THEN GOTO 10000 TO 10000
800 IF KEYWORD(41) = "X" THEN GOTO 10000 TO 10000
810 IF KEYWORD(42) = "I" THEN GOTO 10000 TO 10000
820 IF KEYWORD(43) = "O" THEN GOTO 10000 TO 10000
830 IF KEYWORD(44) = "U" THEN GOTO 10000 TO 10000
840 IF KEYWORD(45) = "D" THEN GOTO 10000 TO 10000
850 IF KEYWORD(46) = "Y" THEN GOTO 10000 TO 10000
860 IF KEYWORD(47) = "N" THEN GOTO 10000 TO 10000
870 IF KEYWORD(48) = "E" THEN GOTO 10000 TO 10000
880 IF KEYWORD(49) = "X" THEN GOTO 10000 TO 10000
890 IF KEYWORD(50) = "I" THEN GOTO 10000 TO 10000
900 IF KEYWORD(51) = "O" THEN GOTO 10000 TO 10000
910 IF KEYWORD(52) = "U" THEN GOTO 10000 TO 10000
920 IF KEYWORD(53) = "D" THEN GOTO 10000 TO 10000
930 IF KEYWORD(54) = "Y" THEN GOTO 10000 TO 10000
940 IF KEYWORD(55) = "N" THEN GOTO 10000 TO 10000
950 IF KEYWORD(56) = "E" THEN GOTO 10000 TO 10000
960 IF KEYWORD(57) = "X" THEN GOTO 10000 TO 10000
970 IF KEYWORD(58) = "I" THEN GOTO 10000 TO 10000
980 IF KEYWORD(59) = "O" THEN GOTO 10000 TO 10000
990 IF KEYWORD(60) = "U" THEN GOTO 10000 TO 10000
1000 IF KEYWORD(61) = "D" THEN GOTO 10000 TO 10000
1010 IF KEYWORD(62) = "Y" THEN GOTO 10000 TO 10000
1020 IF KEYWORD(63) = "N" THEN GOTO 10000 TO 10000
1030 IF KEYWORD(64) = "E" THEN GOTO 10000 TO 10000
1040 IF KEYWORD(65) = "X" THEN GOTO 10000 TO 10000
1050 IF KEYWORD(66) = "I" THEN GOTO 10000 TO 10000
1060 IF KEYWORD(67) = "O" THEN GOTO 10000 TO 10000
1070 IF KEYWORD(68) = "U" THEN GOTO 10000 TO 10000
1080 IF KEYWORD(69) = "D" THEN GOTO 10000 TO 10000
1090 IF KEYWORD(70) = "Y" THEN GOTO 10000 TO 10000
1100 IF KEYWORD(71) = "N" THEN GOTO 10000 TO 10000
1110 IF KEYWORD(72) = "E" THEN GOTO 10000 TO 10000
1120 IF KEYWORD(73) = "X" THEN GOTO 10000 TO 10000
1130 IF KEYWORD(74) = "I" THEN GOTO 10000 TO 10000
1140 IF KEYWORD(75) = "O" THEN GOTO 10000 TO 10000
1150 IF KEYWORD(76) = "U" THEN GOTO 10000 TO 10000
1160 IF KEYWORD(77) = "D" THEN GOTO 10000 TO 10000
1170 IF KEYWORD(78) = "Y" THEN GOTO 10000 TO 10000
1180 IF KEYWORD(79) = "N" THEN GOTO 10000 TO 10000
1190 IF KEYWORD(80) = "E" THEN GOTO 10000 TO 10000
1200 IF KEYWORD(81) = "X" THEN GOTO 10000 TO 10000
1210 IF KEYWORD(82) = "I" THEN GOTO 10000 TO 10000
1220 IF KEYWORD(83) = "O" THEN GOTO 10000 TO 10000
1230 IF KEYWORD(84) = "U" THEN GOTO 10000 TO 10000
1240 IF KEYWORD(85) = "D" THEN GOTO 10000 TO 10000
1250 IF KEYWORD(86) = "Y" THEN GOTO 10000 TO 10000
1260 IF KEYWORD(87) = "N" THEN GOTO 10000 TO 10000
1270 IF KEYWORD(88) = "E" THEN GOTO 10000 TO 10000
1280 IF KEYWORD(89) = "X" THEN GOTO 10000 TO 10000
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1300 IF KEYWORD(91) = "O" THEN GOTO 10000 TO 10000
1310 IF KEYWORD(92) = "U" THEN GOTO 10000 TO 10000
1320 IF KEYWORD(93) = "D" THEN GOTO 10000 TO 10000
1330 IF KEYWORD(94) = "Y" THEN GOTO 10000 TO 10000
1340 IF KEYWORD(95) = "N" THEN GOTO 10000 TO 10000
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1360 IF KEYWORD(97) = "X" THEN GOTO 10000 TO 10000
1370 IF KEYWORD(98) = "I" THEN GOTO 10000 TO 10000
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1570 IF KEYWORD(118) = "Y" THEN GOTO 10000 TO 10000
1580 IF KEYWORD(119) = "N" THEN GOTO 10000 TO 10000
1590 IF KEYWORD(120) = "E" THEN GOTO 10000 TO 10000
1600 IF KEYWORD(121) = "X" THEN GOTO 10000 TO 10000
1610 IF KEYWORD(122) = "I" THEN GOTO 10000 TO 10000
1620 IF KEYWORD(123) = "O" THEN GOTO 10000 TO 10000
1630 IF KEYWORD(124) = "U" THEN GOTO 10000 TO 10000
1640 IF KEYWORD(125) = "D" THEN GOTO 10000 TO 10000
1650 IF KEYWORD(126) = "Y" THEN GOTO 10000 TO 10000
1660 IF KEYWORD(127) = "N" THEN GOTO 10000 TO 10000
1670 IF KEYWORD(128) = "E" THEN GOTO 10000 TO 10000
1680 IF KEYWORD(129) = "X" THEN GOTO 10000 TO 10000
1690 IF KEYWORD(130) = "I" THEN GOTO 10000 TO 10000
1700 IF KEYWORD(131) = "O" THEN GOTO 10000 TO 10000
1710 IF KEYWORD(132) = "U" THEN GOTO 10000 TO 10000
1720 IF KEYWORD(133) = "D" THEN GOTO 10000 TO 10000
1730 IF KEYWORD(134) = "Y" THEN GOTO 10000 TO 10000
1740 IF KEYWORD(135) = "N" THEN GOTO 10000 TO 10000
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1770 IF KEYWORD(138) = "I" THEN GOTO 10000 TO 10000
1780 IF KEYWORD(139) = "O" THEN GOTO 10000 TO 10000
1790 IF KEYWORD(140) = "U" THEN GOTO 10000 TO 10000
1800 IF KEYWORD(141) = "D" THEN GOTO 10000 TO 10000
1810 IF KEYWORD(142) = "Y" THEN GOTO 10000 TO 10000
1820 IF KEYWORD(143) = "N" THEN GOTO 10000 TO 10000
1830 IF KEYWORD(144) = "E" THEN GOTO 10000 TO 10000
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1850 IF KEYWORD(146) = "I" THEN GOTO 10000 TO 10000
1860 IF KEYWORD(147) = "O" THEN GOTO 10000 TO 10000
1870 IF KEYWORD(148) = "U" THEN GOTO 10000 TO 10000
1880 IF KEYWORD(149) = "D" THEN GOTO 10000 TO 10000
1890 IF KEYWORD(150) = "Y" THEN GOTO 10000 TO 10000
1900 IF KEYWORD(151) = "N" THEN GOTO 10000 TO 10000
1910 IF KEYWORD(152) = "E" THEN GOTO 10000 TO 10000
1920 IF KEYWORD(153) = "X" THEN GOTO 10000 TO 10000
1930 IF KEYWORD(154) = "I" THEN GOTO 10000 TO 10000
1940 IF KEYWORD(155) = "O" THEN GOTO 10000 TO 10000
1950 IF KEYWORD(156) = "U" THEN GOTO 10000 TO 10000
1960 IF KEYWORD(157) = "D" THEN GOTO 10000 TO 10000
1970 IF KEYWORD(158) = "Y" THEN GOTO 10000 TO 10000
1980 IF KEYWORD(159) = "N" THEN GOTO 10000 TO 10000
1990 IF KEYWORD(160) = "E" THEN GOTO 10000 TO 10000
2000 IF KEYWORD(161) = "X" THEN GOTO 10000 TO 10000
2010 IF KEYWORD(162) = "I" THEN GOTO 10000 TO 10000
2020 IF KEYWORD(163) = "O" THEN GOTO 10000 TO 10000
2030 IF KEYWORD(164) = "U" THEN GOTO 10000 TO 10000
2040 IF KEYWORD(165) = "D" THEN GOTO 10000 TO 10000
2050 IF KEYWORD(166) = "Y" THEN GOTO 10000 TO 10000
2060 IF KEYWORD(167) = "N" THEN GOTO 10000 TO 10000
2070 IF KEYWORD(168) = "E" THEN GOTO 10000 TO 10000
2080 IF KEYWORD(169) = "X" THEN GOTO 10000 TO 10000
2090 IF KEYWORD(170) = "I" THEN GOTO 10000 TO 10000
2100 IF KEYWORD(171) = "O" THEN GOTO 10000 TO 10000
2110 IF KEYWORD(172) = "U" THEN GOTO 10000 TO 10000
2120 IF KEYWORD(173) = "D" THEN GOTO 10000 TO 10000
2130 IF KEYWORD(174) = "Y" THEN GOTO 10000 TO 10000
2140 IF KEYWORD(175) = "N" THEN GOTO 10000 TO 10000
2150 IF KEYWORD(176) = "E" THEN GOTO 10000 TO 10000
2160 IF KEYWORD(177) = "X" THEN GOTO 10000 TO 10000
2170 IF KEYWORD(178) = "I" THEN GOTO 10000 TO 10000
2180 IF KEYWORD(179) = "O" THEN GOTO 10000 TO 10000
2190 IF KEYWORD(180) = "U" THEN GOTO 10000 TO 10000
2200 IF KEYWORD(181) = "D" THEN GOTO 10000 TO 10000
2210 IF KEYWORD(182) = "Y" THEN GOTO 10000 TO 10000
2220 IF KEYWORD(183) = "N" THEN GOTO 10000 TO 10000
2230 IF KEYWORD(184) = "E" THEN GOTO 10000 TO 10000
2240 IF KEYWORD(185) = "X" THEN GOTO 10000 TO 10000
2250 IF KEYWORD(186) = "I" THEN GOTO 10000 TO 10000
2260 IF KEYWORD(187) = "O" THEN GOTO 10000 TO 10000
2270 IF KEYWORD(188) = "U" THEN GOTO 10000 TO 10000
2280 IF KEYWORD(189) = "D" THEN GOTO 10000 TO 10000
2290 IF KEYWORD(190) = "Y" THEN GOTO 10000 TO 10000
2300 IF KEYWORD(191) = "N" THEN GOTO 10000 TO 10000
2310 IF KEYWORD(192) = "E" THEN GOTO 10000 TO 10000
2320 IF KEYWORD(193) = "X" THEN GOTO 10000 TO 10000
2330 IF KEYWORD(194) = "I" THEN GOTO 10000 TO 10000
2340 IF KEYWORD(195) = "O" THEN GOTO 10000 TO 10000
2350 IF KEYWORD(196) = "U" THEN GOTO 10000 TO 10000
2360 IF KEYWORD(197) = "D" THEN GOTO 10000 TO 10000
2370 IF KEYWORD(198) = "Y" THEN GOTO 10000 TO 10000
2380 IF KEYWORD(199) = "N" THEN GOTO 10000 TO 10000
2390 IF KEYWORD(200) = "E" THEN GOTO 10000 TO 10000
2400 IF KEYWORD(201) = "X" THEN GOTO 10000 TO 10000
2410 IF KEYWORD(202) = "I" THEN GOTO 10000 TO 10000
2420 IF KEYWORD(203) = "O" THEN GOTO 10000 TO 10000
2430 IF KEYWORD(204) = "U" THEN GOTO 10000 TO 10000
2440 IF KEYWORD(205) = "D" THEN GOTO 10000 TO 10000
2450 IF KEYWORD(206) = "Y" THEN GOTO 10000 TO 10000
2460 IF KEYWORD(207) = "N" THEN GOTO 10000 TO 10000
2470 IF KEYWORD(208) = "E" THEN GOTO 10000 TO 10000
2480 IF KEYWORD(209) = "X" THEN GOTO 10000 TO 10000
2490 IF KEYWORD(210) = "I" THEN GOTO 10000 TO 10000
2500 IF KEYWORD(211) = "O" THEN GOTO 10000 TO 10000
2510 IF KEYWORD(212) = "U" THEN GOTO 10000 TO 10000
2520 IF KEYWORD(213) = "D" THEN GOTO 10000 TO 10000
2530 IF KEYWORD(214) = "Y" THEN GOTO 10000 TO 10000
2540 IF KEYWORD(215) = "N" THEN GOTO 10000 TO 10000
2550 IF KEYWORD(216) = "E" THEN GOTO 10000 TO 10000
2560 IF KEYWORD(217) = "X" THEN GOTO 10000 TO 10000
2570 IF KEYWORD(218) = "I" THEN GOTO 10000 TO 10000
2580 IF KEYWORD(219) = "O" THEN GOTO 10000 TO 10000
2590 IF KEYWORD(220) = "U" THEN GOTO 10000 TO 10000
2600 IF KEYWORD(221) = "D" THEN GOTO 10000 TO 10000
2610 IF KEYWORD(222) = "Y" THEN GOTO 10000 TO 10000
2620 IF KEYWORD(223) = "N" THEN GOTO 10000 TO 10000
2630 IF KEYWORD(224) = "E" THEN GOTO 10000 TO 10000
2640 IF KEYWORD(225) = "X" THEN GOTO 10000 TO 10000
2650 IF KEYWORD(226) = "I" THEN GOTO 10000 TO 10000
2660 IF KEYWORD(227) = "O" THEN GOTO 10000 TO 10000
2670 IF KEYWORD(228) = "U" THEN GOTO 10000 TO 10000
2680 IF KEYWORD(229) = "D" THEN GOTO 10000 TO 10000
2690 IF KEYWORD(230) = "Y" THEN GOTO 10000 TO 10000
2700 IF KEYWORD(231) = "N" THEN GOTO 10000 TO 10000
2710 IF KEYWORD(232) = "E" THEN GOTO 10000 TO 10000
2720 IF KEYWORD(233) = "X" THEN GOTO 10000 TO 10000
2730 IF KEYWORD(234) = "I" THEN GOTO 10000 TO 10000
2740 IF KEYWORD(235) = "O" THEN GOTO 10000 TO 10000
2750 IF KEYWORD(236) = "U" THEN GOTO 10000 TO 10000
2760 IF KEYWORD(237) = "D" THEN GOTO 10000 TO 10000
2770 IF KEYWORD(238) = "Y" THEN GOTO 10000 TO 10000
2780 IF KEYWORD(239) = "N" THEN GOTO 10000 TO 10000
2790 IF KEYWORD(240) = "E" THEN GOTO 10000 TO 10000
2800 IF KEYWORD(241) = "X" THEN GOTO 10000 TO 10000
2810 IF KEYWORD(242) = "I" THEN GOTO 10000 TO 10000
2820 IF KEYWORD(243) = "O" THEN GOTO 10000 TO 10000
2830 IF KEYWORD(244) = "U" THEN GOTO 10000 TO 10000
2840 IF KEYWORD(245) = "D" THEN GOTO 10000 TO 10000
2850 IF KEYWORD(246) = "Y" THEN GOTO 10000 TO 10000
2860 IF KEYWORD(247) = "N" THEN GOTO 10000 TO 10000
2870 IF KEYWORD(248) = "E" THEN GOTO 10000 TO 10000
2880 IF KEYWORD(249) = "X" THEN GOTO 10000 TO 10000
2890 IF KEYWORD(250) = "I" THEN GOTO 10000 TO 10000
2900 IF KEYWORD(251) = "O" THEN GOTO 10000 TO 10000
2910 IF KEYWORD(252) = "U" THEN GOTO 10000 TO 10000
2920 IF KEYWORD(253) = "D" THEN GOTO 10000 TO 10000
2930 IF KEYWORD(254) = "Y" THEN GOTO 10000 TO 10000
2940 IF KEYWORD(255) = "N" THEN GOTO 10000 TO 10000
2950 IF KEYWORD(256) = "E" THEN GOTO 10000 TO 10000
2960 IF KEYWORD(257) = "X" THEN GOTO 10000 TO 10000
2970 IF KEYWORD(258) = "I" THEN GOTO 10000 TO 10000
2980 IF KEYWORD(259) = "O" THEN GOTO 10000 TO 10000
2990 IF KEYWORD(260) = "U" THEN GOTO 10000 TO 10000
3000 IF KEYWORD(261) = "D" THEN GOTO 10000 TO 10000
3010 IF KEYWORD(262) = "Y" THEN GOTO 10000 TO 10000
3020 IF KEYWORD(263) = "N" THEN GOTO 10000 TO 10000
3030 IF KEYWORD(264) = "E" THEN GOTO 10000 TO 10000
3040 IF KEYWORD(265) = "X" THEN GOTO 10000 TO 10000
3050 IF KEYWORD(266) = "I" THEN GOTO 10000 TO 10000
3060 IF KEYWORD(267) = "O" THEN GOTO 10000 TO 10000
3070 IF KEYWORD(268) = "U" THEN GOTO 10000 TO 10000
3080 IF KEYWORD(269) = "D" THEN GOTO 10000 TO 10000
3090 IF KEYWORD(270) = "Y" THEN GOTO 10000 TO 10000
3100 IF KEYWORD(271) = "N" THEN GOTO 10000 TO 10000
3110 IF KEYWORD(272) = "E" THEN GOTO 10000 TO 10000
3120 IF KEYWORD(273) = "X" THEN GOTO 10000 TO 10000
3130 IF KEYWORD(274) = "I" THEN GOTO 10000 TO 10000
3140 IF KEYWORD(275) = "O" THEN GOTO 10000 TO 10000
3150 IF KEYWORD(276) = "U" THEN GOTO 10000 TO 10000
3160 IF KEYWORD(277) = "D" THEN GOTO 10000 TO 10000
3170 IF KEYWORD(278) = "Y" THEN GOTO 10000 TO 10000
3180 IF KEYWORD(279) = "N" THEN GOTO 10000 TO 10000
3190 IF KEYWORD(280) = "E" THEN GOTO 10000 TO 10000
3200 IF KEYWORD(281) = "X" THEN GOTO 10000 TO 10000
3210 IF KEYWORD(282) = "I" THEN GOTO 10000 TO 10000
3220 IF KEYWORD(283) = "O" THEN GOTO 10000 TO 10000
3230 IF KEYWORD(284) = "U" THEN GOTO 10000 TO 10000
3240 IF KEYWORD(285) = "D" THEN GOTO 10000 TO 10000
3250 IF KEYWORD(286) = "Y" THEN GOTO 10000 TO 10000
3260 IF KEYWORD(287) = "N" THEN GOTO 10000 TO 10000
3270 IF KEYWORD(288) = "E" THEN GOTO 10000 TO 10000
3280 IF KEYWORD(289) = "X" THEN GOTO 10000 TO 10000
3290 IF KEYWORD(290) = "I" THEN GOTO 10000 TO 10000
3300 IF KEYWORD(291) = "O" THEN GOTO 10000 TO 10000
3310 IF KEYWORD(292) = "U" THEN GOTO 10000 TO 10000
3320 IF KEYWORD(293) = "D" THEN GOTO 10000 TO 10000
3330 IF KEYWORD(294) = "Y" THEN GOTO 10000 TO 10000
3340 IF KEYWORD(295) = "N" THEN GOTO 10000 TO 10000
3350 IF KEYWORD(296) = "E" THEN GOTO 10000 TO 10000
3360 IF KEYWORD(297) = "X" THEN GOTO 10000 TO 10000
3370 IF KEYWORD(298) = "I" THEN GOTO 10000 TO 10000
3380 IF KEYWORD(299) = "O" THEN GOTO 10000 TO 10000
3390 IF KEYWORD(300) = "U" THEN GOTO 10000 TO 10000
3400 IF KEYWORD(301) = "D" THEN GOTO 10000 TO 10000
3410 IF KEYWORD(302) = "Y" THEN GOTO 10000 TO 10000
3420 IF KEYWORD(303) = "N" THEN GOTO 10000 TO 10000
3430 IF KEYWORD(304) = "E" THEN GOTO 10000 TO 10000
3440 IF KEYWORD(305) = "X" THEN GOTO 10000 TO 10000
3450 IF KEYWORD(306) = "I" THEN GOTO 10000 TO 10000
3460 IF KEYWORD(307) = "O" THEN GOTO 10000 TO 10000
3470 IF KEYWORD(308) = "U" THEN GOTO 10000 TO 10000
3480 IF KEYWORD(309) = "D" THEN GOTO 10000 TO 10000
3490 IF KEYWORD(310) = "Y" THEN GOTO 10000 TO 10000
3500 IF KEYWORD(311) = "N" THEN GOTO 10000 TO 10000
3510 IF KEYWORD(312) = "E" THEN GOTO 10000 TO 10000
3520 IF KEYWORD(313) = "X" THEN GOTO 10000 TO 10000
3530 IF KEYWORD(314) = "I" THEN GOTO 10000 TO 10000
3540 IF KEYWORD(315) = "O" THEN GOTO 10000 TO 10000
3550 IF KEYWORD(316) = "U" THEN GOTO 10000 TO 10000
3560 IF KEYWORD(317) = "D" THEN GOTO 10000 TO 10000
3570 IF KEYWORD(318) = "Y" THEN GOTO 10000 TO 10000
3580 IF KEYWORD(319) = "N" THEN GOTO 10000 TO 10000
3590 IF KEYWORD(320) = "E" THEN GOTO 10000 TO 10000
3600 IF KEYWORD(321) = "X" THEN GOTO 10000 TO 10000
3610 IF KEYWORD(322) = "I" THEN GOTO 10000 TO 10000
3620 IF KEYWORD(323) = "O" THEN GOTO 10000 TO 10000
3630 IF KEYWORD(324) = "U" THEN GOTO 10000 TO 10000
3640 IF KEYWORD(325) = "D" THEN GOTO 10000 TO 10000
3650 IF KEYWORD(326) = "Y" THEN GOTO 10000 TO 10000
3660 IF KEYWORD(327) = "N" THEN GOTO 10000 TO 10000
3670 IF KEYWORD(328) = "E" THEN GOTO 10000 TO 10000
3680 IF KEYWORD(329) = "X" THEN GOTO 10000 TO 10000
3690 IF KEYWORD(330) = "I" THEN GOTO 10000 TO 10000
3700 IF KEYWORD(331) = "O" THEN GOTO 10000 TO 10000
3710 IF KEYWORD(332) = "U" THEN GOTO 10000 TO 10000
3720 IF KEYWORD(333) = "D" THEN GOTO 10000 TO 10000
3730 IF KEYWORD(334) = "Y" THEN GOTO 10000 TO 10000
3740 IF KEYWORD(335) = "N" THEN GOTO 10000 TO 10000
3750 IF KEYWORD(336) = "E" THEN GOTO 10000 TO 10000
3760 IF KEYWORD(337) = "X" THEN
```

```

530 IF KEYWORD(2) <> 64:monthly
540 IF KEYWORD(1) <> 6:CLS: AT 10, 6: PRINT "FINISHED": STOP
550 END REPEAT loop
560 END DEFINE menu
570 REMARK .....
580 DEFINE PROCEDURE new_year
590 CLS
600 AT 10,4: PRINT "Loading Arrays"
610 FOR m = 1 TO 12
620 FOR day = 1 TO 30: inf$(m,day) = ""
630 END FOR m
640 CLS
650 INPUT \ "What is day of 1st of January (100 Mon) "first$
660 first$ = first$(1 TO 2): IF CODE(first$) > 95: first$(1) = CHR$(CODE(first$)
  1 - 55)
670 INPUT \ "What is year 2nd year
680 INPUT \ "What day is Good Friday (eq 5 "g$
690 INPUT \ "Which Month is Good Friday (eq 4) "m$
700 IF (year MOD 4 = 0 AND (month(2) = 2)
710 CLS: AT 10,4: PRINT "Calculating Bank Holidays"
720 FOR i = 1 TO 6
730 IF first$ = day$(1,1 TO 2): first$ = i: GOTO 1
740 END FOR i
750 first$ = day$(1)
760 FOR m = 1 TO 12
770 start month
780 END FOR m
790 st_dec = cal(12,0)
800 st_jan = cal(1,0)
810 st_may = cal(5,0)
820 st_aug = cal(8,0)
830 FOR day = 1 TO 30
840 FOR m = 1 TO 12
850 IF day MOD 7 = 6: inf$(m,day) = ""
860 END FOR m
870 END FOR day
880 c_day = st_dec + 24
890 IF st_jan MOD 7 <> 5
900 inf$(1,st_jan) = "222New Year & Day"
910 ELSE
920 inf$(1,st_jan + 1) = "222New Year & Day"
930 END IF
940 inf$(12,c_day) = "222Christmas Day: inf$(12,c_day + 1) = "222Boxing Day"
950 st_c = c_day MOD 7
960 IF st_c = 0: inf$(12,c_day,1) = 1: inf$(12,c_day + 2) = "222Bank Holiday"
970 IF st_c = 6: inf$(12,c_day + 1,1) = 0: inf$(12,c_day + 2) = "222Bank Holiday"
980 FOR day = st_may TO st_may + 6: IF day MOD 7 = 1: inf$(5,day) = "222Bank Holiday"
990 FOR day = st_aug + 24 TO st_aug + 31: IF day MOD 7 = 1: inf$(8,day) = "222Bank Holiday"
1000 FOR day = st_jan + 24 TO st_may + 31: IF day MOD 7 = 1: inf$(5,day) = "222Bank Holiday"
1010 FOR day = 1 TO 30: IF cal(m,gf,day) <> inf$(m,gf,day) = "222Good Friday"
1020 gf = gf + 3: IF gf > 31: gf = gf - 31: m_gf = m_gf + 1
1030 FOR day = 1 TO 30: IF cal(m,gf,day) <> inf$(m,gf,day) = "222Easter Monday"
1040 pur_data
1050 CLS
1060 END DEFINE new_year
1070 REMARK .....
1080 DEFINE PROCEDURE display
1090 CLS: AT 3,0
1100 OPEN #5:GET #5:30:0:0: INK #4,7: PAPER #4, 1: CLOSE #5: OPEN #3:GET #3:0:0:0:
1110 OPEN #3: INK #3,7: PAPER #3,0
1120 PAPER #3,0: CLS
1130 AT 3,1: PRINT " "
1140 REPEAT loop
1150 IF KEYWORD(2) <> 64:PAUSE 20: year = year + 1
1160 IF KEYWORD(2) <> 64:PAUSE 20: month = month + 1
1200 IF KEYWORD(1) <> 6: CLS: CLS #3: menu
1210 END REPEAT loop
1220 CLS
1230 END DEFINE
1240 REMARK .....
1250 DEFINE PROCEDURE p_year
1270 CLS #3: CLS #3: INK #4,2: CLS #4: PRINT #4, "
MINI-PL6
1310 INK #4,4: PRINT #4, "
1320 PRINT #4
1330 FOR day = 1 TO 30
1340 t = 0
1350 IF day MOD 7 = 1: t = 1
1360 FOR m = 1 TO 12
1370 IF LEN(inf$(m,day)) = 1: t = 1
1380 IF cal(m,day) <> "0"
1390 p cal(m,day)
1400 ELSE
1410 t = 1
1420 END IF
1430 FOR i = 1 TO 3
1440 state = CODE(inf$(m,day,i))
1450 SELECT ON state
1460 = 48: p "
1470 = 49
1480 PAPER #3,3,7,3: t = 1: PAPER #3,0
1490 = 50
1500 PAPER #3,4,7,3: t = 1: PAPER #3,0
1510 = REMAINDER
1520 INK #3,4
1530 p inf$(m,day,i)
1540 INK #3,7
1550 END SELECT
1560 END FOR i
1570 p "
1580 END FOR m
1590 IF t = 1: PAUSE 10
1600 END FOR day
1610 CLS
1620 END DEFINE

```


Open Forum

We are always actively seeking programs for publication - either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation - usually not more than 1000 words - should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Bounce

on QL

The program *Bounce* is written for the QL in the form of a procedure that can be

called from within your own program. It uses the QL's cursor command to print text in hi-res.

The program produces an attractive display that could be used at the start of your programs.

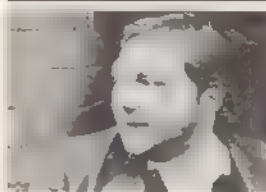
Lines 15 to 18 drop the letter from the top of the screen and lines 19 to 28 bounce the letter up and down.

You may enter any text you like in Line 7 and also a special *juggle* feature can be added by changing Line 8.

```
1 DEFINE PROCEDURE bounce
2 REMARK BY RICHARD SHERGOLD, SELSEY, WEST SUSSEX.
3 PAPER 0
4 INK 7
5 CLS
6 CLSE0
7 A$="BOUNCING LETTERS"
REMARK ENTER YOUR OWN TITLE
8 JUGGLE =0: REMARK ENTER YOUR OWN VALUE
9 CSIZE 3,1
10 REMARK DROP LETTER
11 FOR N = 1 TO 16
12 Z$=A$(N)
13 IF Z$=" " THEN NEXT N
14 INK (2+(N-1) MOD 4)
15 FOR A = 0 TO 45 +RNDX(JUGGLE)
16 TO JUGGLE)STEP 2
17 BEEP 200,30-A
18 CURSOR 16*N+50,A
19 PRINT Z$
20 NEXT N
21 REMARK BOUNCE LETTER
22 FOR T = 11 TO 1 STEP -2
23 FOR Y = 1 TO T STEP 2
24 CURSOR 16*N+50,A-Y:PRINT Z$
25 PAUSE T/15:NEXT Y
26 FOR Y = T TO 1 STEP -2
27 CURSOR 16*N+50,A-Y:PRINT Z$
28 PAUSE T/15:NEXT Y
29 BEEP 400,T
30 END FOR T
31 END FOR N
32 PAUSE 100
33 END DEFINE bounce
```

Bounce
by R Shergold

Arcade Avenue



Getting the edge

Here's a letter from Steven Tilley of Cambridge who must be the first to finish *Avalon* by Hewson Consultants since he did it back on the 1st November. He offers this challenge to anyone else playing the game. "First what is the minimum number of different spells you need to complete the adventure? Second what is the smallest number of different rooms you can pass through to finish. I can do it in 11 rooms which takes 45 minutes playing time."

Another first comes from John Martin of Upminster who claims to be the first Dragon owner to finish *Manic Miner*. He gives us some tantalising hints about some Extra screens known as the Dragon Owners Bonus and The End but refuses to go into details - sorry John, but I don't believe there is any prize offered with the new versions of this game. After all the mess about the *Jet Set Willy* prize I don't know whether Software Projects will go in for that sort of unnecessary thing again.

I've also come across the first person to have any sort of clue to what is going on with the game *Psytraxx* by The Edge. Over to David Sparkes of Croyley Green.

"This excellent game has to be the biggest arcade adventure of all time - I'm running out of paper trying to map the 1000+ rooms. My highest percentage is 43% but I'm working on it!

"There seems to be four separate circuit boards placed one above the other and assuming they are all the same size then each has 250 rooms laid out in a square. The bottom board is coloured white, the second yellow, the third cyan and the fourth green. If you bump into a green 'OR' gate it will take you to the green board etc. Each board is inhabited by different components that get fiercer and more diverse the higher you get.

"The maximum number of program cards you can hold is four. This means the player has to use strategy as there are six colours of force field to deactivate. Once removed the fields will not appear again.

"The main objective seems to be to get the 'Master key cards' to the Emperor Robot's CPU to destroy it. I can't find the CPU yet but the cards have C, E and U on them.

They appear in different places with each game so locating them is tricky to say the least."

Let's finish this week with some short letters - first for Leif Findlay's mum of Mill of Marcus in Scotland - yes 99% is the maximum on *Atc Atac*. Lief wants more *Pokesso* how about this routine from Gary Howland of Boston for *Scubadive* on Spectrum. "Once loaded type L or S to load/save the scores then press shift-break, *Poke* 88711,285 *Poke* 88778,255 then *Goto* 1 for endless lives."

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments from playing up on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

Pollen

on Vic20

This short program runs in 2K on the unexpanded Vic20. As Frederick, the allergy sufferer, you must struggle through the dense (it's a bit thick!) pollen

jungle to reach the capsule of antihistamine solution located at the bottom of the screen.

Luckily, he has three anti-pollen-plasma-bolts which he can use to vaporize the surrounding pollen. If Frederick runs into some pollen, his adrenalin level rises and he dies of a runny nose.

Obviously, the quicker Frederick can

get to the AH solution, the happier he will be.

Program Notes

Lines	1-90	Instructions
Lines	100-140	Set up screen
Lines	150-220	MOVE!
Lines	250-300	Runny nose job ???
Line	550	Yes
Lines	600	No (Good)

```

1 POKE650,255:POKE36878,15:D=36876:C=30720:R=
241
10 PRINT"J" $=100000
20 V=0:M=0
30 E=INT(22*RND(1)+7702)
40 H=INT(22*RND(1)+8164)
45 POKE36879,27
50 PRINT"  *MAZE*"
60 PRINT"  L-DOWN      P-UP"
70 PRINT"  12-LEFT      X-RIGHT"
80 PRINT"  SPACE-PLASMA-BOLTS"
90 FORU=0TO1000:NEXTU:PRINT"J"
100 POKE36879,59
110 FORA=1TO250:POKE,INT(RND(1)*255):POKE,0
120 B=INT(462*RND(1)+7724)
130 POKEB,81:POKEB+C,4
140 NEXTA
150 POKEH,94:POKEH+C,0:GETA$
160 POKEE,90:POKEE+C,2
170 IFAS="L" THENG=22:POKE,R:POKE,0:GOTO250
180 IFAS="F" THENG=-22:POKE,R:POKE,0:GOTO250
190 IFAS="X" THENG=-1:POKE,R:POKE,0:GOTO250
200 IFAS="X" THENG=1:POKE,R:POKE,0:GOTO250
210 IFAS=" " THENG=1:GOSUB1000
220 GOTO150
250 M=M+1
260 POKEE,32:POKEE+C,2:E=E+G
270 IFPEEK(E)=81 THENPOKE36879,43:POKE36877,R
FORV=1TO100:NEXTV:POKE36877,0:GOTO550
280 POKEE,90
290 IFE=HTHEN600
300 GOTO150
550 POKE36879,27:PRINT"YOU HIT A POLLEN GRAIN
AND HAVE DIED OF A RUNNY NOSE!"
560 PRINT"ANOTHER GAME (Y/Y)?"
565 GETG$
570 IFG$="Y" THEN580
575 POKE36879,INT(RND(1)*255):POKE,INT(RND(1)*
255):POKE,0:GOTO565
580 PRINT"J"
590 GOTO200
600 POKE36879,27:PRINT"WELL DONE YOU DID IT!"
610 PRINT"YOU DID IT IN" M"MOVES"
620 IFM<STHENS=M
630 PRINT"LEAST MOVES="S
640 GOTO560
1000 IFV<3 THEN1020
1010 GOTO150
1020 POKEE+1,32:POKEE-1,32
1030 POKEE+22,32:POKEE-22,32:V=V+1:M=M+10
1040 RETURN
    
```

Pollen
by H. Dunn

Baud Walk



On approval

One of the most interesting aspects of the sudden decrease in the price of modems during the last six months has been the appearance of a device that was hitherto only to be found in the domain of the professional networker - the multi-rate modem.

The first modem which achieved public notoriety, was Miracle Technology's Minor Miracle modem which offers virtually every baud rate conceivable packed into its tiny little box. Although initially unapproved by BT, it

has since been given the coveted green sticker of approval, and several thousand are now nestling cosily by the side of many networker's computers.

Many networks charge extra for the facility of accessing their databases at speeds in excess of the almost standard 300 baud, so most people tend to use such networks at this speed wherever possible, in order to keep their bills down. What many do not realise is that, whilst most networks levy a surcharge of between 25 and 50 per cent for use of 1200 baud access, the data so sent is "pumped through" four times as quickly!

To put it another way: The time you spend on-line, and, therefore, your timecharge, do not mention your phone bill, is considerably reduced. Let's take The Source, (a well known US Database), as an example.

For a typical 30 minute, cheap rate call via PSS, the charge for 300 baud access

would be as follows...

	£
Telephone Charges	0.20
PSS Charges (Time)	3.00
PSS Charges (Data/Est)	1.75
Source Connect Fees	3.00
	7.85

Yet the same call, if made at 1200 baud, would probably result in an approximate 75% reduction in on-line time, as follows:

	£
Telephone Charges	0.06
PSS Charges (Time)	0.75
PSS Charges (Data/Est)	1.75
Source Connect Fees	1.00
	3.58

It's fairly obvious that there is a considerable saving to be had, despite the surcharges levied by the Source Telecomputing Corporation for high speeds access.

Most single speed modems cost around £70 to £80. Now, for an extra £50 or so, it is possible to get one of the multispeed/rate generation of modems. Fit the time of writing, Unicomp have announced the imminent launch of a similar device for around

the £80 mark, although whether this will reflect future prices, remains to be seen. Certainly, the price curve seems on a definite downward trend.

One word of caution though is that unapproved modems, if connected to the public telephone network (they'd make an expensive paperweight otherwise!), can at worst, mean possible phone disconnection.

For some networkers I know, that would be unthinkable so it could pay to look for the little green approval sticker.

Robin Wilkinson

Baud Walk is a new weekly column with news on networking, databases, reviews of modems and software and points of contact for information. Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson, Baud Walk Popular Computing Weekly, 18-19 Little Newport Street, London WC2E 8LD. He can also be contacted on Personal mailbox 016053787.

Open Forum

Guesser

on Dragon

In this game the computer selects an integer from 1 to 9. You input what you think is the integer, and if you're correct,

you're given a score, dependant on the time taken. If you're wrong, the computer selects another number and you must try again... beware of the time limit.

Program Notes

Variables

A = Chosen Integer
D = Total Score

G = Number of successful games

T = Points

AS = Guessed integer

Line No

50-100

Set variables

130-270

Select integer/input guess

280-330

Time up loop

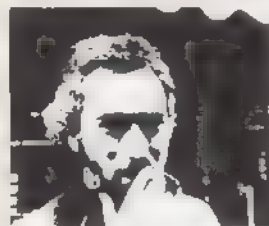
340-440

Display for success

```
10 REM*****
20 REM*TEST YOUR LUCK*
30 REM* BY A.R.WALLIS*
40 REM*****
50 D=0:G=0
60 CLS
70 PRINT"TEST YOUR LUCK"
80 TIMER=0:P=32
90 X=0
100 T=75-(TIMER/10)
130 PRINTP," ";
140 PRINT22," ";
150 P=P+1
160 IF T<1 THEN 280:REM
TIME UP
170 PRINTP,"*";
180 PRINT22.Using"***"
;T;
190 X=X+1
200 SOUND X,2
210 FOR N=1 TO 75:NEXT N
220 A=RND(10)-1
230 AS=INKEY$
240 IF AS="" THEN 230
250 IF ASC(AS)<48 OR ASC
(AS)>57 THEN 220
260 IF VAL(AS)=A THEN 34
270 GOTO 100
```

```
280 PRINT"TIME UP"
290 SOUND 48,3
300 FOR N=1 TO 500:NEXT
310 CLS
320 FOR N=1 TO 500:NEXT
330 GOTO 280
340 CLS
350 PRINT264,"WELL DONE"
360 SOUND 200,15
370 PRINT USING"YOUR SCO
RE IS ##.##";T
380 G=G+1:D=D+T
400 PRINT USING"YOUR AVE
RAGE SCORE IS ##.##";D/G
410 PRINT"PRESS ANY KEY
FOR ANOTHER GAME"
420 BS=INKEY$:IF BS=""TH
430 GOTO 420
440 GOTO 60
```

Guesser
by A Wallis



Just one note

A couple of weeks ago, I wrote briefly about digital sound samplers (DSS) using the Apple IIe and Commodore 64. Those of you who want to try your hand at this most exciting technique but don't have the readies for a DS3 or a Microsound system might be interested in one of the Spectrum-based packages that are around.

I've received information on two DSS systems - one from Datel and one from Ricoll - for the Spectrum and,

though I can't guarantee the quality of these products since I'm still investigating their potential, they both seem well worth further inquiries.

The point of DSS - as those of you who are regular readers of this column will know - is to digitally encode and store a specific sound which can then be modified and re-played. In this way, one actual sound gives us the 'template' by which to produce a whole range of digital sounds of differing pitches, tempos or durations.

Professional DSS systems are extraordinarily expensive because high-quality audio work demands the highest mechanical and electronic standards of equipment. Inevitably, cheap systems - whatever the claims of the manufacturers - will not meet professional standards. The question is, are they usable at all?

Datel Electronics of Unit 8, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent, produces a plug-in DSS device for the Spectrum at £49.95. The Datel DSS is an absolutely basic 8-bit digital-to-analogue and analogue-to-digital converter in a box, together with some essential software.

With this kind of system, the hardware is minimal and software is the most important thing. I'll be reporting on my results with the software soon. You can phone Datel on 0782-273615.

The Action Replay from Ricoll Electronics, 48 Southport Road, Ormskirk, Lancashire L39 1QR, is priced at £177.75 and again consists of a plug-in unit and essential software.

Ricoll point out that an amplifier and a microphone will both be needed to get anything out of their sampler. As with the Datel DSS, Ricoll's

uses the Spectrum keyboard as a music keyboard to play-back the sampled sound. However, a voltage control facility allows you to plug in synthesizers so that sampled sounds become available to them. The specification looks reasonable for a sampler, and it's encouraging to note that Ricoll make no outlandish claims for their system. Phone them for further details on 0895-79101/2

Gary Herman

The Music Box

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micro and music.

Any readers with experience of computer music making or companies with new product news are invited to write to: drop a line explaining what they're doing to: Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD.

48K SINCLAIR ZX SPECTRUM

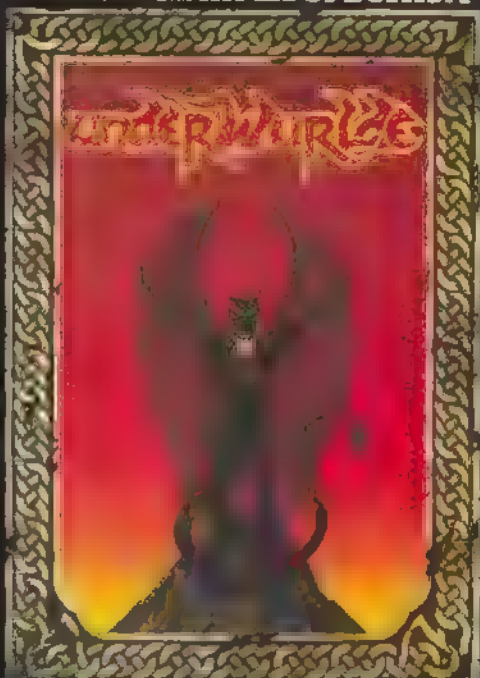


BBC MODEL B 1-2 OS

48K SINCLAIR ZX SPECTRUM



48K SINCLAIR ZX SPECTRUM

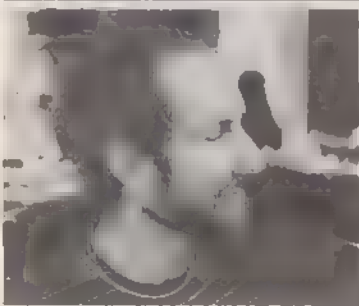


COMMODORE 64



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Tony Bridge's Adventure Corner



Get out of jail free

I begin this week with a letter from Germany from Hans Zagorski: "Dear Tony, as German grammar is a bit difficult, adventure programs are not very popular in Germany, and we don't have any 'Adventure Help' in our computer magazines. So, I would be pleased to find other computer enthusiasts in England, who own a Commodore 64, like myself. Is it possible to mail order *A Guide to Playing The Hobbit*? Also, what use is the Broken Timber in *Zork I* and in *Zork II*, how do I move the Menhir?"

Thanks for the letter, Hans. The address of Melbourne House, who publish the book you mention, is: 39 Milton Trading Estate, Abingdon, Oxon. OX14 4TD. I'm sure that there are a lot of Commodore users who would be only too glad to write to you with hints on the *Zork Trilogy* (as far as the Broken Timber goes, I have never found a use for it either!). Write to Hans at: Beethovenstrasse 3, 87 Würzburg, West Germany.

From closer to home, Godstone in Surrey to be exact, Mr A Blount writes.

His feeling is that adventures can so often become just a matter of reading the whole dictionary in order to find the right word. Again I have to agree - but this is one of the facets of computer adventuring that will not, I feel, change in the near future.

"For example," he says, "take *Urban Upstart*. I am unable to find the right combination of words to get out of jail." All that has to be done here is to type *Wait*. With hindsight, of course, this is pretty obvious (after all, what else do you have to do in jail), but maybe it does not seem so obvious at the time! And this is why adventure helpfiles are so popular now, which brings us nicely to Mr Blount's final point: "I notice that some weeks you give an arrangement of letters and figures that can be used as clues - but how do I use them?"

Well, I always try to explain this system when I employ it, but to make it clear - you will find a list of words at the end of the Corner, just like the one for this week. When giving out clues to adventures, I refer to these words by the

number assigned to them in the list. In this way players who may not yet have reached this particular point in an adventure will not have their enjoyment spoilt. You may notice, while reading other publications (why are you?) that many codes are used - I think this is probably the easiest and most practical (as well as being easier for me to work out!).

Now, enough of me giving Help - here are a couple of lady adventurers and Corner readers who are willing to impart some of their knowledge to others. Karen Tyers says: "Thanks for printing my letter in *Popular* and answering my questions. I was amazed at the response I got to my offer of help - the postman literally staggered up my drive with the letter! It's all good fun, and I've made a lot of new friends. I have now finished *Lords of Time*, *Adventure Quest* and *Invincible Island*." Write to Karen at Pains Way, West Ewell, Surrey. Patti Taylor also offers help in *Lords of Time*, as well as *Quest of Merravid* and *Planet of Death*. But she also needs to know how to pass the pirate in *Ring of Power*. Write to her at 167 Uplands Road, West Moors Wimbourne, Dorset.

Before I get onto the first Help of 1985, let me just mention a couple of bugs that have been brought to my attention. The first is another in the long and honourable line of *Hobbit* bugs. It's been noticed by Alan and Daphne Davis, who have picked up quite a few of these. "It started with the well-known evaporation of the Black River, fast river and so on. We then typed 'Look' and to our astonishment found ourselves in the Spider's Web. But then - after telling us we were in the Web, the program proceeded to list all the objects present. And it churned out everything in the entire game! All the goblins (some dead), the dead Dragon, the wooden boat, some lunch, Gandalf, the wood elf, all the keys - it went on and on! And here's the mystery. We knew everything listed except one: 'some stone'. Now we've never found 'some stone' anywhere, nor have we found it since the bug manifested itself. Have you? Has anyone?"

On the subject of *Hobbit* bugs, Jonathan Bisset found that when he pressed 'CARR' on a friend's Commodore by mistake, he was greeted by a new creature called a CARRACK (maybe of the same breed as the ARAW!) - when his sister tried typing 'WEWEWEWEWE' on her Spectrum (well, each has her own), she was told that 'Thorin black hest the small curious key'.

Melbourne House have not been sitting still when it comes to bugs. *Sherlock* is a great program, and seems to contain its fair share of *Sherlock* bugs. Roy Stilling, of Surbiton has found the first. I was interviewing Daphne Strachan at about 7.30 pm on Monday, when the program announced that I was out of memory and went into the Loading rou-

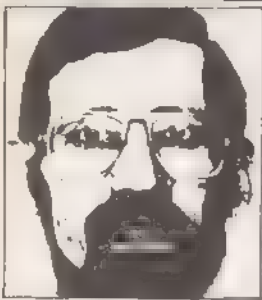
line. I've heard that saying 'Hello' to Watson in the morning is to be avoided, and this is what I had done that morning. I'm sure that I, and others, will find more *Sherlock* bugs, but despite this, I find *Sherlock* to be an excellent adventure and a worthy successor to *The Hobbit*. Can anyone tell me where the keys to Basil Phipps' and Tricia Fender's London homes are? I can reveal the whereabouts of a secret room, a fake drawer-bottom and how to open Basil's safe without getting shot. To find the secret room, 21,23,23. To find the fake drawer-bottom, 21,28,12. For a few surprises, 21,28,31,10,20. If you want to give Roy some information, write to him at 16 Broomfield Road, Surbiton, Surrey.

Kaye Newton is stuck in *The Stolen Lamp*, which is for the BBC and part of the Lothlorien Adventuremaster series. "I have got the Key Box, and I know that it contains the Key. But I can't get at it whatever I do." This is part of another problem, which crops up earlier. First of all, you must 26,30,34,16. Then 22,7,34, 30,29,14,3. You must have the Key Box with you when you do this, and you will find that the Key will survive.

Finally, a couple of old favourites, just in case anyone is a newcomer to adventures, having received a computer for Christmas. *Planet of Death*, for the ZX81 and Spectrum was one of the very first British programs to sell in any quantity (vast quantities, I should think!). Graham Scott of Newcastle can't get past the Force Field. I suppose that this is a problem that I will have to answer regularly every three months or so for the next several years, along with 'How do I get out of the Goblin's Dungeon?' In particular, Graham is mystified at my mention of a Laser, when I last looked at this problem. First, 24,8,27,32,15,35,18,1, 33,19. Then you'll find the Laser 18,6.

1 WEST	19 CREVASSE
2 TUESDAY	20 BODY
3 PIN	21 CAREFULLY
4 THE	22 KILL
5 BEFORE	23 BOOKCASE
6 HUT	24 USE
7 GUARD	25 LAKE
8 WAIT	26 HAVE
9 FLOORBOARD	27 FROM
10 BROWN'S	28 EXAMINE
11 OPENING	29 BY
12 DRAWER	30 GRENADE
13 UNTIL	31 MRS
14 PULLING	32 HOUSE
15 TO	33 OF
16 YOU	34 WITH
17 SAFE	35 CROSS
18 IN	

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure you cannot progress any further write to: Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.



Wrong listing

G. Robertson of Edinburgh writes:

Q I have been trying to run a program from *The Explorer's Guide to the ZX Spectrum and ZX81*, but to no avail. I have enclosed a listing of this program. When I sent the same copy of the program to Sinclair Research, they said that there was something wrong with the printer, which was not so.

Their second answer was that I was holding the Enter key down too long.

I hope you can help me with this problem, as my guarantee is up next month, so if I know quickly I can return my machine.

A The program should be changed so as not to use *lnkey\$* in line 20. This will produce the expected result. The correct program is therefore:

```
10 LET A$ = ""
20 INPUT Z$
30 LET A$ = A$ + Z$
40 PRINT A$
50 PAUSE 25
60 IF Z$ < ">" THEN GOTO 20
70 PRINT "THE END"
```

All the facts

Dominic Frost of Ecclestone, Staffs writes:

Q Please can you help me? At the moment I have a Dragon 64 computer. I have used this to pass an 'O' level in computer studies and have found it generally very useful. Now that Dragon Data have gone bust I have decided to sell my computer and buy another.

The two computers I am interested in are the Sin-

clair QL and the Amstrad CPC464. I have read all the facts about them but I cannot decide. Which should I buy?

A As you say that you have read all the literature on the two machines I will not repeat any of the technical analyses. In your position I would be quite tempted to go for the Amstrad - but that is very much an individual view.

My reason is because it is a complete system (ie, complete with monitor and cassette player). Whilst the Amstrad is not as fast a machine as the QL, the difference in speed is not likely to be noticeable to you.

I guess from your comments that you are not really interested in a long term system with massive expansion potential that will last you into the next decade (most computers only have a realistic life-span of five years in any case, before they are made obsolete by new entries into the market).

There is no question that the QL is the more technically innovative of the two machines - but it may have been launched a bit ahead of its time.

Company service

J. Herridge of Villa des Roses, Paris, France, writes:

Q Further to your page in Vol 3 No 38, R. C. Jones BFPO 25 (A long search): I can inform you that I have a stock of software and MPF-II computers. I have a large number of software titles available at a cost of £2.50 each.

I also sell peripherals for the MPF-II, such as joysticks, keyboards and interfaces. My company's name is *Micro Fair*.

A It is always nice to be able to report a successful conclusion to a search for information on behalf of a reader. It is also nice when companies come forward and inform you of the services that they offer.

I am always glad to be able to pass this information on to readers.

Simple addition

R. Neville of Laarbruch, BFPO 43 writes:

Q I have come to the conclusion both my Commodore 64 and VIC 20 cannot cope with simple addition or subtraction.

Note the results from some simple subtractions:

```
100.09 - 100.0900000036
100.09 - 100.01.0800000131
100.09
100.02 .0700000003
100.09
100.03 .0600000098
100.09
100.04 .0499999997
```

These errors can be corrected by rounding the results to two decimal places:

Let $R1 = \text{Int}(N/0.01 - 0.5) * 0.01$

But, why the error in the first place.

A The error you have found is caused by the method used in the Commodore machines for the arithmetic instructions. As you know computers actually do their arithmetic. The code to actually achieve totally accurate fractional calculations depends upon the use of, so called, 'floating point' techniques. The Commodore machines do not actually use these techniques correctly, and hence the slight errors in all fractional calculations. It is interesting to note that a number of other machines, including the Spectrum and the BBC 'B', use the floating point methods correctly.

Talking Currah

S. G. Young of Glasgow writes:

Q I recently purchased a Currah Microspeech unit for my Spectrum. However, some programs do not work with the unit connected, and I feel that it cannot

be beneficial in the expansion port to repeatedly remove and re-install the unit. Therefore some Pokes or a short routine to disable the unit whilst still having it connected would be highly desirable. Can you help?

A Unfortunately, I do not know of any way of disabling the Microspeech unit. It is possible that one of the readers of PCW will know of a method, so I issue a plea... can anyone stop the Currah from talking?

Which printer

Colin Johnson of Bishop Auckland, County Durham, writes:

Q I own a Spectrum - and would like advice on which printer I should buy. The printer should of course do listings, as well as screen dumps, and some word processing. It should also cheaply interface with the Spectrum. I have noticed two thermal transfer printers, the Epson P.40 and the Brother HR-5, the latter being a bit expensive. My price limit is £130 and I want to be able to use normal paper and possibly ZX keywords.

A All thermal printers have to use heat sensitive paper, and therefore by definition cannot use normal paper.

The two printers you mention are both extremely good value for money devices, and I could recommend either of them to you. The Epson as you say is the cheaper of the two, but is none the worse for that. My personal preference, however, would be for the Brother, which is £159 is slightly above your limit.

Go on... be a devil, spend a little more this year; it may be the only printer you will ever buy. (Just in case any of your are wondering, I do not have any shares in Brother, only BTI)

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek II* to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, PCW, 12-13 Little Newport Street, London WC2R 3LD.

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FOR SALE Grandstand Scramble £15; Astro Wars £10, both nearly new and in vgc. Demon Driver £5. Kevin Kegan's Soccer C3, all in good condition. Tel: Longfield 4108 after 6pm

SHARP MZ711, 64K + built-in data recorder and colour printer/plotter + paper pens, games manual and other literature, all in perfect condition. £250 or v.n.o. Tel: 041 620 0032

QL FOR SALE JM ROM, £323 lead included used once only. £450 o.n.o. Tel: 0904 769164

SHARP MZ800, 48K memory built in screen + cassette deck, s/w £120 Tel: Luton 592758

SINCLAIR BASIC DICTIONARY of computing, Quick Shot II, joystick, Hobbit, books 100s of mags. Tel: 051 733 0090 after 4pm

VECTREX GAMES computer, built in high resolution monitor with eight cartridges - extras cost £500, will sell for £20. Tel: 01515 2766 eves.

TX80 dot matrix printer. Offers Tel: 01-881 2525 after 7pm

TEC F18/55 daisy wheel printer very good condition £900 Tel: 01-688 4807 after 7pm

TEXAS 99 4A, 2 joysticks, 3 modules, Tombstone City, Soccer, Space Invaders + 2 tapes £70 Tel: 0287 32561 after 4pm

MEMOTECH MTK 512, still boxed, hardly used excellent condition, 3 tapes and joystick £200 Tel: Oxford 711160 after 7pm

MICRO SPEECH for sale by Currah for the Spectrum, £20 o.n.o. Mark 8 Dawn Close S' Helens Merseyside WA9 5JB. Tel: 815126

CASSETTES Action Quest, Ghost Hunter Temple of Apehal Anstirko £10 each Tel: Burnwood 72055

DISKS Zork I, Gorf Clowns & Balloons, Wizard War Adventureland £10 each. Tel: Burnwood 72055

GOLDRING 8900 NGC, low mass hi-fi pickup cartridge excellent condition superb sound, cost £70, bargain £25. Tel: Drim Barnard 0375 30885/0206 42647 after 6pm

CURRAH speech synthesiser and £75 worth computer games including Orbit and Jet Set Willy £65. Tel: Clason, 29 Wilson Street, Grangemouth, Stirlingshire

HELLFIRE WARRIOR disk £10 Tel: Burnwood 72055

SINCLAIR QL VM ROM, s/w, printer cable. Pascal compiler, cost £455. £365 no offers Tel: 061 998 9665

ZX INTERFACE 1 2 ZX microdrives, 4 cartridges, book, boxed, 6 months old. £100 o.n.o. Tel: 02403 4735

FOR SALE, Hercules, 1 month old, Black Thunder (Quicksilver) 1 month old, £8 for both or will split. Tel: Steven 01-459 7655

Wanted

WANTED to purchase, Acorn compatible disc operating system for BBC com-

puler Tel: Sue (Slaines) 58707 after 6pm

AQUARIUS cassette game wanted for 4K model Tel: Bolton 29628 after 4.15pm

DRAGON 32 cassette recorder, joystick, 16 cassettes + cartridge, swap for Acorn Electron, willing to part-ex, cash Tel: 01-863 8767

SWAP IBM 41 + recorder + games for Atari 600 + disc drives Tel: 0668 60549 after 6pm

48K SPECTRUM + interface 2 + tape recorder + joystick + 20 new games to swap for CBM 64 and C2N. Tel: 01-470 3536

SPECTRUM 48K printer and s/w, will swap for Commodore 64 and cassette unit. Spectrum in good condition, also cassette recorder included. Tel: 0643 597455

SPECTRUM wanted, Jetset Willy designer or screen editor, also Spectrum computing magazine, tapes no 6 onwards. Contact M Russell, 10 Gwasted Terrace, Cwmillery, Aberllyfany, Gwent NP23 1JY

WANTED DRAGON 84 and/or Delta disk drive, also Delta disk doctor, swap Apple II package or make you reasonable offer in cash. Tel: 01-673 7877 eves.

AMSTRAD PENPAL wanted to exchange software magazines, ideas on our great machine, seventeen year old male or female contact: K Small 167 Allway Drive Kilmintilloch Giggsway G66 2SS.

WANTED ORIGINAL copy of Business Microdrive Cartridge as split with Sinclair expansion pack with Tasword and Masterfile on it. good price paid. Tel: Bookham 56327

EXCHANGE SINCLAIR Spectrum 48K, only four months old for CBM64 printer or disk drive over £95 worth of s/w with Spectrum. Tel: 051 423 5493 after 6pm

WANTED BACK ISSUES of Ahle and Analog for Atari, will also buy books, and evaluates any anything also interesting for Atari with disk drive Tel: 01-788 5838 eves or weekends

WANTED DTI Jetpack compiler, disk version for CBM64, will pay £20. Tel: Jim 0904 25305 after 6pm

SWAP my classical guitar Alhambra model with carrying case for Commodore 64 with extras or BBC model B plus cash Tel: 01-363 3383

WANTED URGENT broken Spectrum, not issue one will pay up to £20. Tel: Paul 0625 010474 after 5pm

BROTHER XP44 plus modem wanted, Holt, Phantom Ranch, Nr Chalfont, Lewes BN8 4EB

SWAP 2 Spectrum 48K - ZX microdrive and interface 1 + dust cover 1 four cartridges and software (Spectrum under guarantee), for Commodore 64 + C2N unit. Tel: 01-607 1204

SWAP SCALETRIC 500, 3 cars, pitstop set, chicanes, lapcounter, autostart, crossovers, extra track, worth well over £100. for 16K or 48K Spectrum. Tel: Tyneside 2857893 after 5pm

WANTED Ariles Planet of Death for ZX81, must be original copy only Tel: Paul 0602 283093 after 5.30pm

SWP CBX MAXCOM 804 power rack + s/w meter 1 ariel + patch leads for Dragon - hardware or Vlc 80 - hardware, or will split. Tel: 01-595 2988

WANTED TANDY TRS-80/MC 10 software, books, expander and Vic-20 software and expander also wanted K Moody, 341 Burringham Road, Scunthorpe

WANTED broken C64, up to £50 cash paid. Tel: 031 669 5203 after 8.30pm

WANTED SHARP PC1251 pocket computer fair price paid, printer interface also welcome, other portables considered. Tel: 0834 256 119

SWAP AMSTRAD 484 colour computer for CBM 64 or split £200 Tel: Lea Valley 718606

WANTED 48K SPECTRUM under £80. Tel: Lea Valley 718606

48K SPECTRUM wanted issue 3 £50-60 & s/w appreciated. Tel: 051-733 0090.

WANTED 1541 DISK DRIVE for CBM 64 £50-100. Easy script & easyfile. 051-733 0090

SWAP FLIGHT SIMULATOR II by sub-logic & other disc s/w for CBM 64C200 Cartridge 0492 78351 (after 6pm)

BBC compatible disc-drive. DFS, Solidus sideways ROM & daisywheel, printer wanted. Inexpensive complete system considered. Tel: 01-887 6274.

WANTED any cheap complete to swap or Buy Andy. 04862 23845 after 6pm

WANTED DRAGON DISK DRIVE based spreadsheet program for Dragon 32 plus any information on how to use Teletwriter with disks Tel: (0233) 23764

WANTED SPECTRUM original software. Offers (including airmail postage) to: Matthew Clarke, 43F Mandalay Road, Singapore 1130. Republic of Singapore

WANTED faulty Sinclair Spectrum. Must be in reasonable condition. I will pay £20 cash. Send your computer to Richard Clason, 31 Wilston Street, Grangemount, Strirlingshire, Scotland

WANTED ASIMTRAD compatible printer, will pay up to £70, must be in working condition. Amricub, 42 Mount Stewart Street, Carlisle, Lancashire Tel: 0555 72175 after 5pm.

WANTED ATARI 850 interface Tel: Basildon 1710404

WANTED TI-Mag. magazines, also TI-894A extended basic module Tel: 623001.

SWOP C.B. equipment cost over £150 for CBM 1541 disk drive or will sell for £150 o.n.o. G. Saxton 20 Castle Walk, Hyson Green, Nottingham NE1 6GZ

WANTED ACORN ELECTRON in good condition with tape heads Tel: 0823 400327 after 4pm

Spectrum's for Sale

SPECTRUM 48K - Trophy Cassette Recorder, DK-Tronics Light Pen + Interface, Print & Plotter Jitter. Over £200 of original software, magazines & books. Worth £375 Sell for £189 Tel Bristol (0272) 552255

SPECTRUM S/W. 14 titles including Paytron, Skoolcade and Steve Davis Snooker. Cost £80 + will sell for £25 Tel: 01-754 2459, ask for Alan.

SPECTRUM 48K Fuller FDS Prokey-board, G/teed, boxed + 15 top quality original games, inc. Hobbit & Books etc. Interface I, M/Drive & spare cartridge. Programmable Joystick. 1/2 Quickshot Joystick, 2 D/C tape recorder, Currah speech syn, Upan unit books + manual. £300 ono. Tel: 01-880 4811 ext 3736 (day)

SPECTRUM 48K + Interface + 1 microdrive + ZX printer. Original pack, aging + manual. Total values, £275 and £150. Now on bigger things. Tel: (Chris) 01-833 7050.

48K SPECTRUM. Original keyboard, manuals, manuals, Power Pack, Low Profile Professional keyboard, Ram Turbo Joystick Interface, books + mags. Original S/W games, inc. White Lightning, £150 ono Tel: Morthorpe-Tyldes 76530

SPECTRUM S/W. all new, 50 games inc. Ghostbusters, Metal Dog, Underworld, Tir-na-nog, half price, current speeds £12 Tel: Ansooth 01-998 8117 after 5pm.

48K SPECTRUM + Currah speech unit, interface I, Kempston interface + £200 of original games inc. Great Space Race, Ghostbusters, mags, books. £200 Tel: 0472 8445 80

48K SPECTRUM. boxed, guaranteed s/w collection £185 no offers Tel: Watlington-Thames 226534 after 5pm.

HUNCHBACK XS + Dark Star £3, all originals. Tel: 01-228 9704.

FOR SPECTRUM 48K, mass storage Wafa drive, Rotronics, new boxed, complete with w.p. bargain £89 o.n.o Tel: London 33 157.

SPECTRUM add-on keyboard, real type-

writer type keys, £20. Spectrum s/w original + books from 50p to £4. Tel: 0255 434329

FOR SALE original Spectrum software, cost £190, plus Currah microspeech and printer only £100 o.n.o. Contact D. Duffin 57/71 Donnelly, University of Stirling, Stirling, Scotland

SPECTRUM SOFTWARE, all originals, £ for £18 or £3 each. Spectrum Graphics book £4. Tel: Godalming 6589.

RICOLL keyboard for ZX Spectrum metal add-on with spacebar etc. Tel: 041 959 6125.

Commodores for Sale

FOR SALE Commodore collection of software over 50 originals ranging from £1.25 to £5. Dave, 45 Stonerwood Avenue, Hall Green, Birmingham B28 0AJ. Tel: 021-777 5023

CBM 64 Revelation for sale, £400. Crows Cartridge. Also only £400. Tel: Lichfield 05437 52440 after 5pm

CBM 64 1541 Disk Drive £140. Also over 400 games to sell. Tel: 021 440 2124 (Amert) after 6pm

VIC 20 - Software for sale. Very latest games. Amrog Software Projects, Llanesoch + 3 cartridges. All Software worth over £200. Sell for £100, or offer Tel: 241 0370

BARGAIN VIC20 - cassette unit £160 of original s/w + joystick. Customer etc, v.c. sell separately £99. Tel: 01-892 6525.

VIC 20 super expander cartridge £18, machine code cartridge £18, light pen + S/W £18, programmable reference guide £5, all excellent condition. Tel: 061 494 1887 after 6pm

VIC 20 s/w. all as new inc. snooker, half-price also Adrian speech £11, + light pen £7. Tel: Ashtar 01-993 4047 after 6pm (weekdays).

CBM 64 games all original over 120 games for sale on cassette disk + ROM, easy script - 6 games Games Designer Studio 64 on disks, batch purchases welcome, ridiculous prices. Tel: 01-448 8178 after 6.30pm

VIC 20 starter pack + 16K ROM pack, inc. cassette disk program book and basic computer manual inc. £100 worth of s/w cartridges - cassette £150 Tel: 0487 812061 after 4.30pm

CBM VIC 20 + C2N cassette recorder, 16K Ram, 30 original games, introduction to Basic part I. 20 books. cartridge game, everything boxed in good condition £90 Tel: Nasing 3510

CB4 2 months old + cassette unit, joystick all boxed and guaranteed with original games + mags, £200. Tel: Hornchurch 42642 after 4pm

BUSINESS CBM64 easy stock and ill. line finance for sale still boxed and sealed. brand new £50 each Tel: Burgess Hill 3516

COVOK Voice Master for CBM64 with headset, new version wanted, plus lightpen and very good quality Hi-Rus software, require 1515 and 1526 printer plans. Tel: 01-840 3610

CBM64 GAMES at good prices inc. Hobbit Valhalla AMC, Manic Miner, Hunchback, Bugaboo, Hover, Omega Run, Hungry Horace, BC Bill - 60 prog book, all originals Tel: 0942 712370

COMMODORE 1520 printer, excellent condition, hardly used £55. Tel: Rotherham 70149

VIC-20 16K RAM, basic intro joystick about 200 programs, Arcade, Adventure, Strategy cassette unit, books, mags, fully boxed and perfect. £100 or swap Spectrum with similar accessories. Tel: 01-748 7325

CBM 64 software for sale, inc. Raid over Moscow, Poi Position D. T. Decathlon T.L. Spy v. Spy, Scrabble, Chess and many more. Tel: Michael 0826 24506

CBM 64 originals inc. Nato Commander, Sherlock Arabian Knights Tel: 051 733 0090 after 4pm

CBM 3040 dual disk drive, good condition, perfect working order with some software and connecting cable. Accept £250 or consider price. Tel: 0244 675717

CBM 64 original cassettes, everything must go at half price, 32 titles, Juice Pritail II, Ghostbusters, T.L. Paytron, Clitfanger NATO Commander Busicarc, Hobbit Tel: 061 682 5024 after 7pm

Tandy for Sale

APPLE IIT 48K disk drive + green hi-res monitor. Apple writer licensed printer board, disks, books etc. Bargain £270. Tel: Tel 01-673 7877 even

TANDY COMPUTER books, £2-2059, 26-2107, 62-1002, 62-2073, 62-2087, 26-2116, 62-2063, 62-2064, 62-2066, 62-2067, 27-2240, 26-2115, excellent condition, half price or swap BBC publications in same condition TRS80 Mod 1 interface £2K, good offers. Tel: 0325 852470 central Scotland

NEW APPLE MACINTOSH hardly used, original cases, new Apple image writer printer + s/w Macwrite + Macprint, swap for Apricot F1 with suitable printer + adjustment Tel: 0278 67416

TANDY PORTABLE CBM64 executive work station MRP £579 for sale inc. £300, 24K module 100 (26-3802) Tel: E. Strath 0602 506431

APPLE IIT 48K system, disk drive w/p software, printer card room for 6 hours, 16 monitor disks books, mags etc. on s/w expanded cpm etc. £270. Tel: 01-787 7877 even

BARGAIN Electron for sale with software all original and complete, also included the Electron Book and 5 magazines, shop price £340 only £210 Tel: 05827 61572

TANDY CGP-115 four pen colour printer/plotter plus lead for BBC micro worth £150 + £110 o.n.o. Tel: 0253 68112

ADVENTURE HELPLINE

The Hulk on Spectrum. How do you get the bio gem? How do you get past the chief examiner or Ultron? Ashley Barker, 5 Main Street, Monkton, Prestwick, Ayrshire, Scotland.

Ship of Doom on ZX81. How do I get the key out of the case? What good is the red light? Paul Latham, 34 Rivergreen Crescent, Bramcote, Nottingham.

Valhalla on Spectrum. How do I get to Krank's Hall? Richard Taylor, 12 The Crescent, Wragby, Lincoln.

Hampstead on Spectrum. Is there any point in visiting the Covent Garden district? Gwyn Owens, 38 Redcliffe Walk, Wembley, Middx.

The Castle on Spectrum. How do you get past the wall? Donald Mackay, 2 Stewart Drive, Stornoway, Isle of Lewis, Scotland.

Life Search on NewBrain. I have lost the instruction leaflet and cannot get past 'Set Direction'. Can anyone help? T Stevenson, Rookery Cottage, Vicarage Lane, Cadney

Brigg, S. Humberside.
Sphinx Adventure on BBC. I cannot go west the goblins. The crowd around me tear me limb from limb! Hamish Sander, 12 Strand Street, Padstow, Cornwall (Tel: Padstow 532698).

Hobbit on Spectrum. How do I get out of the goblin's dungeon? Please help, I'm going crazy! Mark Fox, 59 Prince's Way, Stourport on Severn, Worcs.

Tir Na Nog on Spectrum. Will someone please tell me what the four pieces of the Seal of Calum are? Colin Loftus, 35 Kenworthy Lane, Northendon, Manchester M22.

Sherlock on Spectrum. How do I find the Old Hill Road? Should I have had Mrs Jones/Tricia Fender arrested at this stage? Viv Chance, Barbarons Beach Hotel, PO Box 626, Mahe, Seychelles (Postcards please!)

Twain Kingdom Valley in C64. How do I get the long staff to kill the dragon? S. Blease, 2 Ashover Street, Gorse-Hill, Stretford, Manchester. (Ed: please try using stamps that haven't been used before, next time!)

Planet of Death on Spectrum. How do you get the rope hanging from the tree? How do you get the coin from the lake? Paul Lowth, 3 Picknere Road, Hadforth, Wilmslow, Cheshire.

Adventure on Vic20. How do I get past the bear without dropping the honey? How do I heat the firestone once it is cold? K Morgan, 65 Richardson Street, Ashington, Northumberland.

Calixto Island on Dragon. How do I reach the island? I have the boat and the pump, but I cannot find the paddles which I need to row ashore. Where are they! Mark Carleton, 37 Dunemer Drive, Dundrum, Dublin, Eire.

Mountains of Ket on Spectrum. How do I get to the mountains? Robert Fitt, 30 Wakelin Chase, Ingatstone, Essex.

Snowball on BBC. I can't get off the bottom level. Mark Collingwood, 140 Cherrydown Avenue, London E4.

Eureka! on Spectrum. How do I greet Nero after winning the chariot race in Roman Italy? I offer help with Prehistorical, Arthurian, and Golditz adventure in return. Andrew Hartley, 63 Main Road, Nether Kellet, Cranforth, Lancs.

Forest at World's End on Amstrad. Where do you find

the crystals of Vulcan? Is there anything down the well? Do you need to get into the volcano? Dominic Frost, 28 Badgers Croft, Eccleleshall, Staffs (Tel: Eccleleshall 850298).

Tir Na Nog on Spectrum. Any help anyone can give me. I've wandered around the landscape and been jumped on by a monkey in pit boots. P McLean, 146 Mortimer Road, South Shields, Tyne and Wear.

Colditz on Spectrum. I'm stuck because I cannot find the sharp knife? What knife? I presume that is what the sharpening stone is for. Can anyone help? Michael Shaw, 38 Broom Mead, Bexleyheath, Kent.

Quest for the Holy Grail on Spectrum. I cannot get past the knight that goes Nil John Bevan, ■ Oakland Cottages, Red Brow Lane, Daresbury, nr Warrington.

Franklin's Tomb on Oric 1. What is the magic word that opens the treasure room gate? Unfortunately, this is not my only problem with this adventure. D Comer, 88 Danygraig Street, Graig, Pontypridd, Mid-Glamorgan.

Snowball on Commodore 64. How do I get the Bat-pak from the video viewer? ■ J Woodford, 16 Wellspring Terrace, Pontymister, Gwent.

Urban Upstart on Commodore 64. How do I stop sinking on the building site? Where is the airport? Karl Marsh, ■ Cocknag Road, Dresden, Stoke-on-Trent.

Madness and the Minotaur on Dragon. How do I find mushroom: go ■ forest: get lightening: get sword: and learn spells? Mark Gadsby, 157 Pinewood Park, X Cove, Farnborough, Hants.

Valhalla on Spectrum. After getting Drapnir I can make no progress towards Skornir. Barry Hoole, 5 Melville Road, Mill Park, Port Elizabeth, South Africa.

Valhalla on Spectrum. I have not found Ofnir yet, and I have had the program for six months. Help, please? Stuart Jones, 20 Diane Drive, Rhyl, Clwyd, Wales.

Sherlock on Spectrum. How do I prove Basil Phipps did the double murder? How do I prove the Major innocent? Andrew Lang, 11 Penfold Drive, Great Billing, Northampton.

Event	Date	Venue	Admission	Organisers
Hi-Technology and Computers Trade in Education Exhibitions	Jan 24 10.30am-1.00pm Educationalists Jan 25 1.00pm-4.00pm Jan 26 1.00pm-8.00pm Public Jan 26 11.00am-6.00pm	Bathurst London EC2	Free in advance from organisers	Computes Marketplace 01-930 1612
Apricot and Sirius Computers Show	Feb 5-7 10.00am-6.00pm	Hamington Town Hall London W8	Free in advance from organisers	Paradise 01-241 2384
EX Microcity	Feb 9 10.00am-6.00pm	Alexandra Parish London N22	£1.25 adults £0.50 children (in advance)	Miko Johnston 01-816 9172
The LET '88 International Trade Show	Feb 12-18 10.00am-6.00pm Feb 19 10.00am-4.00pm	Olympia 2 London W6	Free in advance from organisers	Turner Wheatland 0923 775000

Readers' Chart No 7

- | | | |
|----|---|-------------------|
| 1 | (1) Knight Lore (<i>Spectrum</i>) | Ultimate |
| 2 | (2) Daley Thomson's Decathlon (<i>Spectrum/C64</i>) | Ocean |
| 3 | (3) Ghostbusters (<i>Spectrum/C64</i>) | Activision |
| 4 | (4) Underwulde (<i>Spectrum/C64</i>) | Ultimate |
| 5 | (7) Elite (<i>BBC/Electron</i>) | Acornsoft |
| 6 | (5) Booty (<i>Spectrum/C64</i>) | Firebird |
| 7 | (6) Beachhead (<i>C64</i>) | US Gold |
| 8 | (-) Pyjamarama (<i>Spectrum/C64/Amstrad</i>) | Mikro-Gen |
| 9 | (-) Manic Miner
(<i>Spectrum/C64/Amstrad/Dragon/MSX</i>) | Software Projects |
| 10 | (-) Staff of Karnath (<i>C64</i>) | Ultimate |

Now voting on week 9

An apology: we have been unable to continue with our weekly chart prize fund. We have been advised that it contravenes the Lotteries and Amusements Act. However, we will of course continue to accept your votes and run the chart.

Each week Popular is compiling its own special software top ten chart - compiled by YOU.

All you have to do to vote is to fill in the form below with the names of your current three favourite software titles (or copy the form on to another sheet if you don't want to damage your magazine) and send it off as soon as possible to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 9 closes at 2pm on Wednesday January 23 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name	My top 3: Voting Week 9
Address	1.....
.....	2.....
.....	3.....

New Releases

WATCHING

I think the Amstrad is going to make it, you know. I say this without reference to the virtues of the machine (of which there are many) but use as evidence the fact that Amsoft, quite apart from the reasonable number of independent suppliers is steadily and regularly releasing software for the machine.

A couple more programs have just turned up. *Centre Court* and *Detective*, the latter originally by Argus Press Software. *Detective* caught my eye as being, apparently, a bit different from the norm. "A game of deduction and tactics" it says on the box. It is a game for several players and involves, here and there, players being honest enough to turn their face from the screen and not looking at certain information which is only provided to each player individually - this is usually asking for trouble.

The idea is that each player assumes a different character and by searching a mansion must discover the identity of the murderer (who has done in the butler). The computer shows you a map of the house and throws the dice for you. The answer is found by being

how many wrong - the competitive edge comes from trying to get to the right location and reasoning it out quickest. The graphics are OK and the game works reasonably well.

Don't be fooled into thinking it is some sort of adventure though.

Program *Detective*

Price £7.95

Micro Amstrad

Supplier Amsoft

Brenwood House

169 Kings Road

Brenwood

Essex CM14 4EF

HARD NOSED

Asterios software is, I suspect, one of those small software houses made up of enthusiasts rather than hard-nosed executives (sorry if this is entirely incorrect, Asterios). Its first game (to my knowledge) is for the BBC and called *Nightmare Hall*. Although basically a text adventure it has various elements of Dungeons and Dragons to make the game that bit different.

Nightmare Hall is one of those Hammer Horror type places where all have met with death by unnatural means and evil forces. There are absolutely hoards of traps for the unwary as well as a maze or two for you to wander about in aimlessly.

The BBC is not over supplied with adventures so this is a particularly welcome program. Well worth a look.

Program *Nightmare Hall*

Price £5.95

Micro BBC

Supplier Asterios Software

Kinross

Kendal Ave

Epping

Essex CM16 4PP

MORE ROM

For some people even BBC Basic is not perfect. Such aesthetes will much approve of the Basic extensions Rom available from Micro Power. The Rom permanently adds a number of new commands both to Basic and to the general machine vocabulary of direct commands - the latter are mostly designed to warn you and get you out of tricky



programming situations.

Additions to Basic include *While*, *End...While*, *Case*, *When*, *Otherwise*, *End...Case*, *Loop*, etc, etc - all adding to structured programming which is to programmers in Basic what BBC English is supposed to be to the rest of us.

Direct commands include *Cont* which resumes a program around, *Diab* and *Blob* to do binary/decimal conversions, *Status* for the amount of memory you have left and so on. *Verify* for saved programs may be a particularly welcome addition.

A manual explains and illustrates the use of each new command and a small card briefly summarises the syntax for quick reference.

Program *Basic Extensions*

Price £19.95

Micro BBC

Supplier Micropower

Northwood House

North Street

Leeds

LS7 2AA

YOYO

The big problem with straight flight simulation programs is the fact that if they are any good they will be extremely difficult to master, but at the same time uneventful in the ordinary arcade terms. Bids to mix programs in which simulation skills are prominent but which also have other features to retain your interest have sometimes been successful - the classic *Fighter Pilot* on the Spectrum is a case in point.

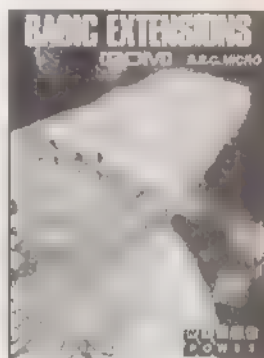
F15 Strike Eagle requires you not only to fly a jet fighter with (as an option) two joysticks (you can also use one

joystick and keyboard), but engage in air-to-air battles, assaults on targets and defend yourself from a vast number of missiles. The scenario is intended to be as realistic as possible, eg, different kinds of attack require different kinds of responses and manoeuvres in order to win.

There are two sections to mastering the game. First, there is the by no means easy question of learning how to fly the plane properly - climbing, rolling, general aerodynamics and then there are a whole range of skills to do with combat and defence to be learned - do you know what a high speed yoyo is?

Then there are the various different terrains - there are six missions available over areas like Libya, Egypt, and Iraq each needing different skills and posing different threats. All in all enough to keep you going for months on end.

The blurb describes the graphics as 'superb' and 'three dimensional' I think that's overstating the case a



bit, the 3D is reasonable and the graphics above average but this is not a game I'd buy for those reasons. Rather this looks like being one of the most wide ranging, detailed and exact simulations you can buy.

As such it is really an excellent effort.

Program *F15 Strike Eagle*

Price £14.95

Micro Commodore 64

Supplier US Gold

Unit 10

The Parkway

Industrial Centre

Heneage Street

Birmingham B7 4LY



in the correct location and entering the correct figures for weapon, murderer and motive.

Actually, appearances being deceptive, this is really a souped-up version of *Mastermind* (rather than *Cluedo*) where you seek a series of colour patterns. As in that game for each guess you are told by the computer how many guesses are right and

NO CATCH

Tim Love's Cricket, from Peaksoft for the Commodore 64, is a cross between a simulation and arcade game with many of the virtues of that venerable classic Football Manager. Whilst the programming is only OK the design and play of the game makes it tremendously addictive and makes any doubts about some of the graphics vanish.



The game simulates a 60-over match and you can play against either a fellow cricketer or the computer. Somewhat like the system in dungeon games, you get 50 points for batting and 30 points for bowling to share out, naming your own teams, and allotting skills amongst the players, to give you the tactically best team. You also choose the style of play eg 'F' for fast bowler 'S' for slow and select a wicket keeper and batsmen.

Factors like the dampness of the weather and hence the wicket will affect the choice of bowler and so on, to a certain extent, the choices of team have an effect on the outcome

of the game. Joystick is used for bowling and batting. In bowling, the joystick first controls speed, then spin, moving from one to the other when the bowler reaches the crease. In batting you control the position of the batsman and the height of the bat. When the ball has been hit (or missed) the screen display switches to an aerial view of the action as fielders try to get it and now the joystick lets you make runs - if any.

You can even set up the position of your fielders and, of course, move them when fielding for a catch. It's a game that bears much repeated play with a real sense of tactics. The graphics are adequate and no more but you'll find such considerations quickly become irrelevant as you play the game.

Program Tim Love's Cricket
Price £8.99
Micro Commodore 64
Supplier Peaksoft
48 Queen Street
Balderton
Newark
Notts NG24 3NS

ZONE CLONE

More American software made available in this country by US Gold. This time it's something called Stellar 7 from The Graphics People. The Blurp describes the usual 'last defender against the alien hordes' type plot. This time you are armed (only) with the Raven experimental armoured craft which is transported to seven different places, there to battle using only its armory and an invisible cloak type thing.

Now all this might lead you to believe that this is not what

it in fact is, for what we have here is yet another version of Battlezone complete with 3D line graphics and strange alien landscapes.

In its favour, Stellar 7 is probably the most sophisticated version of Battlezone available on the Commodore and includes features like a zoom lens which lets you peer into the far distance, various sorts of weapons and even a self-destruct mechanism presumably so that you can do it to yourself before they do it to you.

The game plays fairly well, looks OK and should do well, but I hope Atari don't find out.

Program Stellar 7
Price £9.95
Micro Commodore ■
Supplier US Gold
Unit 10
The Parkway Industrial Centre
Heneage Street
Birmingham B7 4LY

HORRORS

There isn't a lot of software about for the C16, not surprising really, perhaps, given the short amount of time it's been available. But still... it makes you think.

Anyway Melbourne House have launched on to the C16 world that 'horror of horrors' a gamespack. Actually it's worse than that; there are two of them.

Now Gamespacks are usually a classic case of more equals less. Unsuspecting punters desperate for games buy the things thinking that 20 games for £6 is great value without realising just how bad some games can be. Net result is 20 games, most of which are never played more



than once. Gamespack stories abound amongst computer buffs in the same way that painful operations ■ the lives of hypochondriacs.

Anyway, what of Melbourne's offerings, all of which are in Basic and games of one sort or another. Thankfully there has been some attempt to provide stuff that isn't going to suffer from being brief, simple and written wholly in Basic. So what you get are a lot of puzzles, logical questions, simple strategy games and the like. You also get Breakout and Hangman but, what the heck, someone likes them.

There is nothing in either of the packs that ■ going to keep you glued to your computer but mostly it's OK. Some of the programs bear a few repeats but nothing is above the level of what you might find featured as a readers' game in this and other magazines.

Program C16 Games Pack 1 and 2
Price £5.95 (each)
Micro Commodore 16
Supplier Melbourne House
Castle House
Castle Yard
Richmond
TW10 6TF

This Week

Program	Type	Micro	Price	Supplier	Program	Type	Micro	Price	Supplier
Centre Court	■	Amstrad	£7.95	Amsolt	Shoot the Rapids	Arc	Commodore 64	£7.95	New Generation
Detective	■	Amstrad	£7.95	Amsolt	Stellar 7	Arc	Commodore 64	£9.95	US Gold
Survivor	Arc	Amstrad	£7.95	Amsolt	Tim Love's Cricket	S	Commodore 64	£8.99	Peaksoft
Identify Europe	■	BBC	£7.95	Kosmos	Mank Miner	Arc	Dragon 32	£7.95	Software Project
Titan	UI	BBC	£10	Tomorrow's Orm	Pitfall II	Arc	MSX	£11.99	Activision
C16 Games Pack I	Arc	C16	£5.95	Melbourne Hse	River Raid	Arc	MSX	£11.99	Activision
C16 Games Pack II	Arc	C16	£5.95	Melbourne Hse	Pete n Barry	Arc	Spectrum	£8.90	Impact
196S	Arc	Commodore 64	£1.99	Mastertronic	Finders Keepers	Arc	Spectrum	£1.99	Mastertronic
Dallas Quest	Ad	Commodore 64	£14.95	US Gold	Alien	S	Spectrum	£8.99	Argus
Front Line	Arc	Commodore 64	£7.00	Interceptor	Disease/Relocator	■	Spectrum	£5.95	Graysoft
Veikyril 17	Ad	Commodore 64	£9.95	Palace Software	Villain	Arc	Vic 20	£6.00	Interceptor
Hyper Biter	Arc	Commodore 64	£7.95	PSS					

Key: Ad — adventure/Arc — arcade/Ed — education/
S — strategy-simulation/Ut — utility

Pick of the week

DON'T SHOOT

Shoot the Rapids is the latest Commodore 64 game from New Generation software, a company best known for Spectrum titles like *Travels with Trashman* and *3D Maze*. It has the immediate virtue of

for left, right and vital for rapids, backwards. The canoeing motion requires some skill to master - the keys are very responsive and a very even left right tap is necessary for speed.

There are various kinds of challenges - slalom against the clock as you twist and turn to get through the water gates, obstacles like islands, rocks, a speedboat and from time to time, a beaver which gets in the way. It's amazingly addictive and graphically excellent - the canoe is a large sprite and although everything is viewed from above there is a real sense of 3D to the landscape of banks and rocks.

One point, though, don't be put off by the cover which is totally naff - I don't think photographs are generally a good idea.

Program *Shoot the Rapids*
Price £7.95
Micro Commodore
Supplier New Generation
The Brooklands
15 Sunnybank
Lyncombe Vale
Bath BA2 4ND



being based around something not yet covered anywhere else in the industry, ie canoeing.

You might think that this sport is a pretty unlikely candidate for a computer game but actually it works very well. You simulate paddling using three keys or a joystick

difficult to explain than simply indicated what it will do. You can step singly through Ram, Rom and graphics routines; there is an intelligent masked string search routine, a timer, facilities for breakpoints in Rom and Ram, an intelligent memory mover and you can relocate the whole thing in memory.

As a debugger you get con-

ditional breakpoints at relative branches, you can use OSLI commands within it and it displays four memory locations which are up-dated



as you single-step through. Finally, for those who understand all this stuff, you can disassemble, it has a set of arithmetic operators, hex-dec conversion ASCII dump, and hex dump and it will print the lot out. Something similar is planned for the Spectrum.

Program *Titan*
Price £10
Micro BBC
Supplier Tomorrows Dream
Software
Richmond House
18 Sydenham Road
Bristol BS6 5SH

JUMPED UP

Hyper Biker is one of those software packages that will mean a lot to you if the Basic idea of controlling a bike and jumping over things appeals to you and nothing at all if it doesn't.

There are various kinds of biling challenges and the secret to of them comes in

mastery of the bike controls. There is not only the pedals which operate in realistic fashion - each rotation getting easier as you pick up speed. Handle bars are not only for left and right but also for such bursts of showy egomania as wheelies.

There are obstacle races, straight races, wheelie races, jumps both long and high, bunny hops, some solo, some in competition and, like *Track and Field*, you get a scrolling background.

It's probably a fairly sophisticated simulation but I'm afraid it left me cold.



Program *Hyper Biker*
Price £7.95
Micro Commodore 64
Supplier PSS
452 Stoney Stanton Rd
Coventry
CV6 5DC

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

DREAM ON

Tomorrows Dream Software is a new software house producing programs for the BBC and the Spectrum. Its inaugural release is a utility for the BBC called *Titan* which is described as a 'Debugging Monitor Utility'.

What it is is really more

Activision, 15 Horley House, Marylebone Road, London NW1 01-486 7588. **Amsoft**, Brentwood House, 169 Kings Road, Brentwood, Essex. 0277 230222. **Anirog**, Victoria Industrial Park, Victoria Road, Dartford, Kent DA1 5AJ 0322 92513/8. **Argus**, No 1 Golden Square, London W1R 3AB. **Graysoft**, Bedford Way, Rugeley, Staffs WS15 1LB. **Interceptor**, Interceptor Micro's, Lindon House, The Green, Tadley, Hampshire. **Impact**, 0884 38312. **Koamos**, 1 Pilgrims Close, Harlington, Dunstable, Bedfordshire LU5 6LX. **Mastertronic**, Park Lorne, 111 Park Road, NW8. 01-402 3316. **Melbourne House**, 39 Milton Trading Estate, Abingdon, Oxon OX14 4TD. 0235 835001. **New Generation**, Freepost, Bath BA2 4TD. 0225 316924. **PSS**, 452 Stoney Stanton Road, Coventry CV6 5DB. 0203 667556. **Palace Software**, Scala Cinema, 275 Pentonville

Road, London N1. 01-278 0751. **Peaksoft**, 48 Queen Street, Balderton, Newark, Notts NG24 3NS. 0636 705230. **Software Projects**, PO Box 12 Bearbrand Complex, Alton Road, Wootton, Liverpool L25 7SF. 051 429 9393. **Tomorrow's Dream**, Richmond House, 1b Sydenham Road, Bristol BS6 5SH. **US Gold**, Unit 10, The Parkway Ind Centre, Heneage Street, Birmingham B7 4LY. 021 359 3020.

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

This Week



The right stuff

We are moving out of an age where the dominant methods of communication requires the objective and rational approach of science.

The progress of science has long since moved beyond the point where all people can grasp it emotionally, and what is happening instead is the creation of a suspended world based on a mixture of myth and scientific wish fulfilment. That this is the case is nowhere seen better than in the computer field.

At one point a new scientific truth could touch the whole civilised world.

This is not the case today. Science, I believe, appeals only to those with a rigidly logical disposition. Or, to put it in psychological terms, science only affects the left and not the right hemisphere of the brain. The brain is divided into two sides, with the left being the centre of logical thought. Thought takes place in a rational, linear fashion, and studies show that this is where the speech and writing centres are located. The right hemisphere, on the other hand, is the creative and intuitive side of the brain. Any aspect of thought that involves using your imagination will involve your right hemisphere.

Increasingly, scientific progress seems to appeal only to the rational mind and the 'large pattern' understanding of the right side is lost. The result of this is an increasingly confusing world. Moreover, it is a world where those with an inkling of this situation are able to take advantage of others' ignorance. This ignorance is easier to find in males, since being able to bring other human beings into the world engages your right hemisphere auto-

matically. Something denied men. Thus it is that the home computer world remains a left brain, male-dominated one. There are few pursuits for the male that engage the right hemisphere, but this holistic side of the brain is vital if the human animal is to survive.

Most of the people involved in computers are left-hemisphere dominated, and seeking to learn to use their right hemispheres more. The code that programmers work with is the ultimate left-hemisphere logic - an apparently meaningless list of letters and numbers. Yet this code needs the right hemisphere to make any sense. Thus programmers often choose the extreme right-hemisphere possibilities to contrast with the code.

Home computer owners are at the forefront of a revolution in the sense that humanity grows sick in a world dominated by one hemisphere or way of thought. People are gradually starting to recognise this, and the great journey from the left to the right hemisphere has begun. What will inevitably happen is that those with a creative bent will emerge as leaders of a kind vastly different from our current ones.

Few public figures openly use their right hemispheres, but those that do so successfully become very successful. Anyone reading Sir Clive Sinclair's thoughts on the coming domination of silicon over carbon will recognise the right hemisphere at play. The idea of a Golden Age of literature, poetry and scientific advances that free people from drudgery is an attractive one, but it is simply a metaphor.

When pressed Sir Clive cannot be specific about the type of world which might surround us in such a future. He can't, because it is the result of logical thought. It is an appeal to the right hemisphere from a man who appears to be very left-hemisphere oriented. A scientist would never give it currency, but that doesn't matter. It is more than a very good sales pitch from the arch self-publicist. It is an observation that our current materialistic ethos will not - cannot - survive.

Our future appears unfocused, other than to say that we will perhaps swing into right hemisphere thinking with a vengeance, based on the repression of instinct for too long. At that event, we will become akin to the Homeric Ideal, when we discover the tribal society that we haven't quite lost (witness the miners strike). Those more in touch with the gods (our potent right hemisphere myths) will perhaps emerge as the new leaders.

Mike Shalom

Mis-deal!

Puzzle No 141

Sam was experimenting with a standard pack of playing cards when he found something rather curious. By dealing out the cards a number of times, without shuffling them between deals, he noticed that the cards were once again in their original order.

What he did was to deal four hands of 13 cards from left to right, dealing as you would normally when playing cards. The pack was then reassembled by stacking the piles in order, pile 1 (the left hand pile) ending up on top, and pile 4 (the right hand pile) on the bottom. This procedure was then repeated without shuffling.

How many operations are required before the cards are once again in their original order? If four extra cards are added (making 56 in all), how many deals are needed?

Solution to Puzzle No 138

The lock's combination is 704, and Sonya's age is 64. We need to test all three-digit numbers to determine which are exactly divisible by the sum of their digits. The program counts the number of times each integral result occurs and prints out any that have a value of 8. This only occurs with the number 64.

If the program is modified to print out these individual values, it can be seen that 320, 812, 640, 704, 232 and 960 all result in 64 when divided by the sum of their digits, but as the correct combination can be determined knowing the units digit - only if this were a '4' would a unique answer be possible.

```
10 Dim Z(100) 20 For N=100 to 999 30
  NS=STR$(N) 40 T=0 50 For F=1 to 3 60
  T=T+VAL(MID$(NS,F,1)) 70 Next F 80 If N/
  T=INT(N/T) then Z(N/T)=Z(N/T)+1 90 Next
  N 100 CLS 110 For F=1 to 100 120 If Z(F)=6
  then print F;Z(F); 130 Next F 140 GOTO 140
```

Winner of Puzzle No 138

The winner of Puzzle 138 is Dr Ian Logan of Skellingthorpe, Lincoln, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for Puzzle No 141 is February 1.

The Hackers



GIFT FROM THE GODS



GIFT FROM THE GODS

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Ocean Software is available from selected branches of: **WOOLWORTH**, **WHISMITH**, **John Menzies**, **LASKYS**, **Rumbelows**, **COMET**,
Spectrum Shops and all good software dealers. Trade enquiries welcome.



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